VOL. XXXVII No. 3 MARCH 1952

MECCANO MAGAZINE

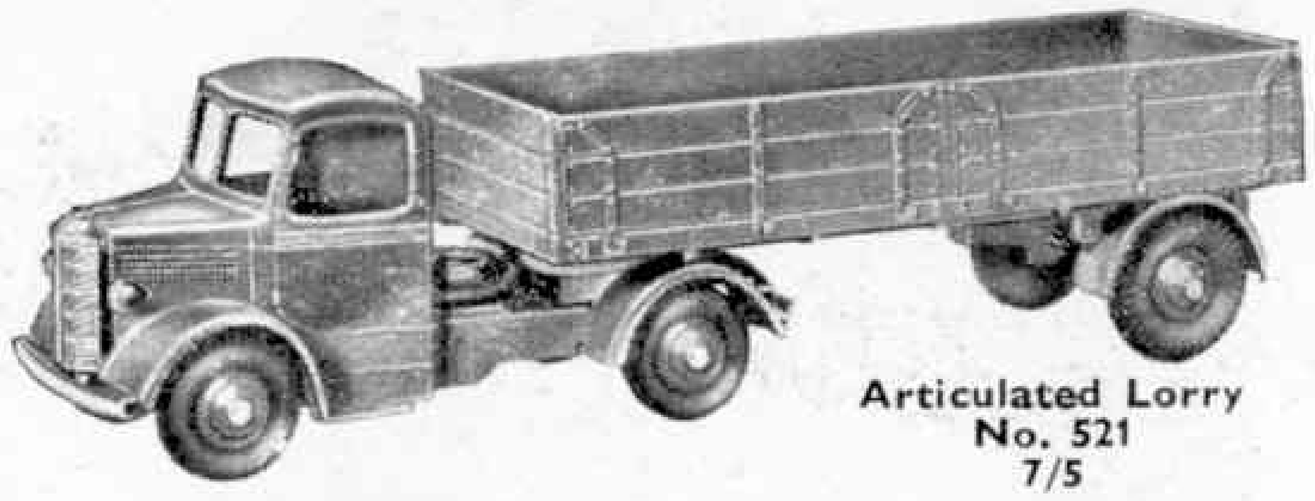
OFF DOVER

9D.

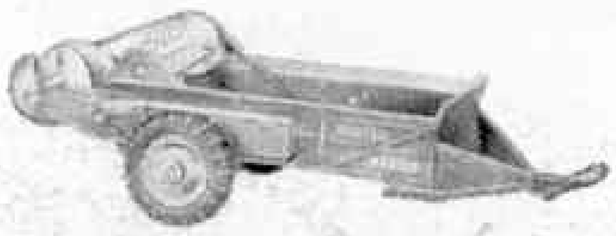
DINKY TOYS

TRADE MARK REGD.

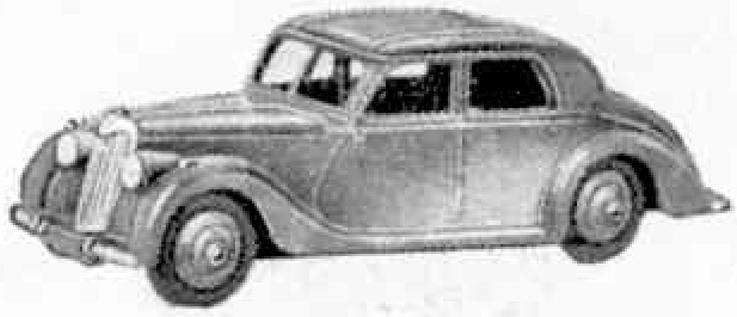
Dumper Truck
No. 562
8/8



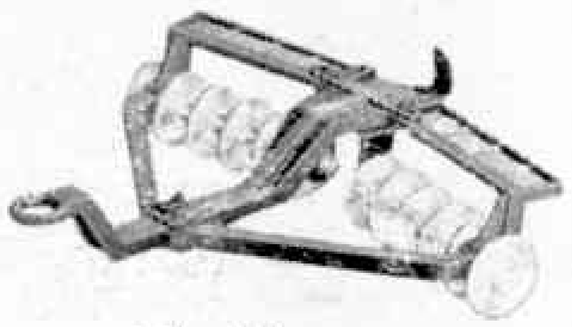
Articulated Lorry
No. 521
7/5



Massey-Harris Manure
Spreader No. 27c
4/9



Riley Saloon
No. 40a
2/11

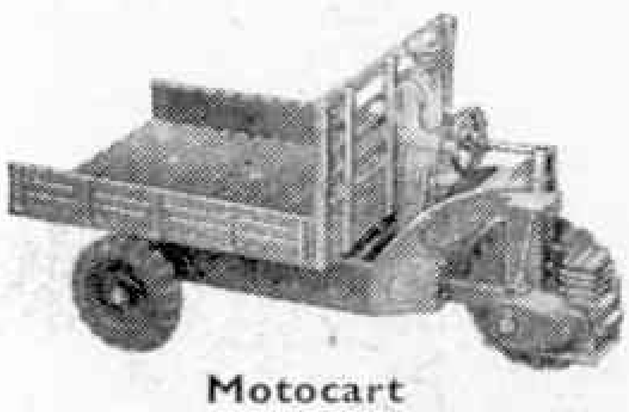


Disc-Harrow
No. 27h
2/9

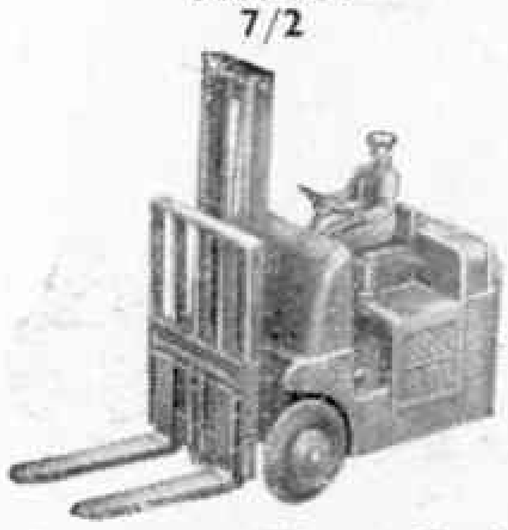
Ford "Fordor" Sedan
No. 139a
3/1

Refuse Wagon
No. 25v
7/2

Rover 75 Saloon
No. 140b
3/9

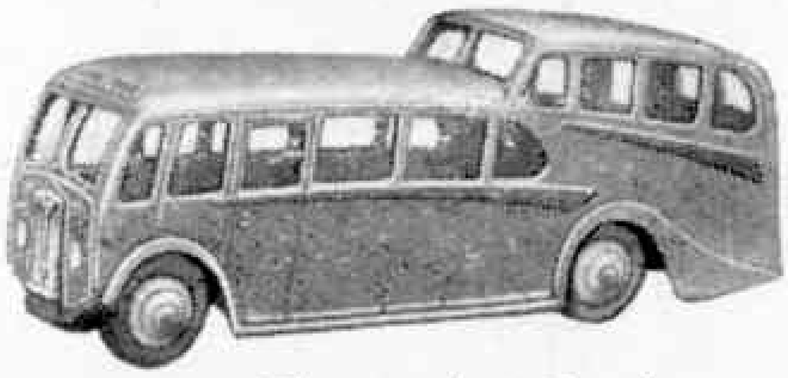


Motocart
No. 27g
5/3



Coventry Climax Fork
Lift Truck No. 14c
8/1

Austin "Atlantic" Convertible
No. 140a
3/11



Observation Coach
No. 29f
3/11

Foden Diesel 8-wheel
Wagon No. 501
9/11

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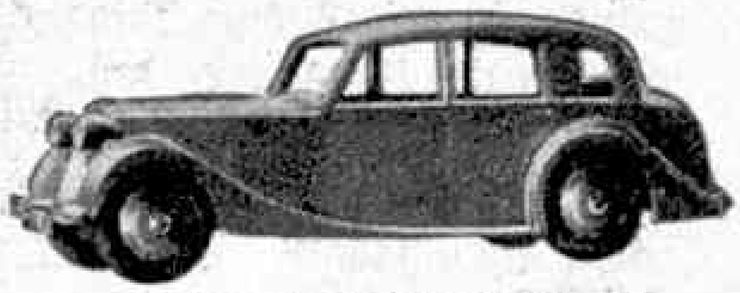
Guy Van
No. 514
7/9

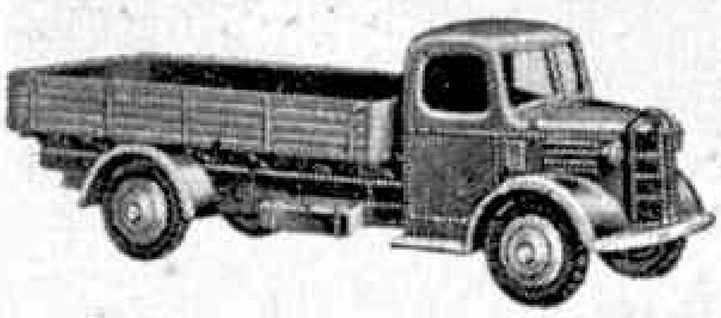
Comet Wagon with Hinged Tailboard No. 532
7/9

Hudson
"Commodore" Sedan
No. 139b
3/9

Land Rover
No. 27d
4/8



Triumph '1800' Saloon
No. 40b
2/11



Austin Wagon
No. 30j
2/11

Austin Taxi
No. 40h
3/10

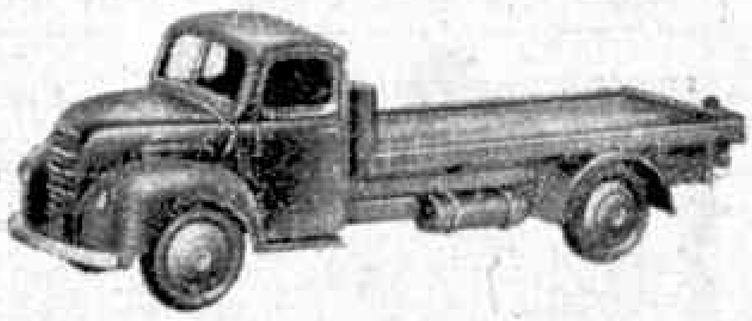
Breakdown Lorry
No. 25x
6/6

Daimler Ambulance
No. 30h
3/5

Estate Car
No. 27f
3/5

Bedford End Tipper
No. 25m
5/11

Foden Flat Truck with Chains
No. 505
11/6



Fordson "Thames" Flat Truck
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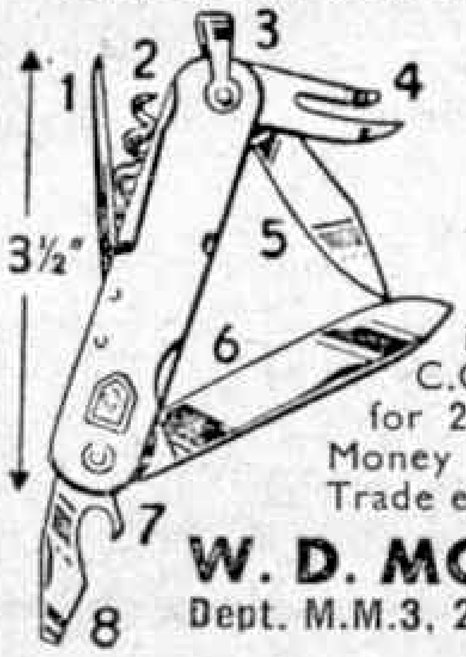

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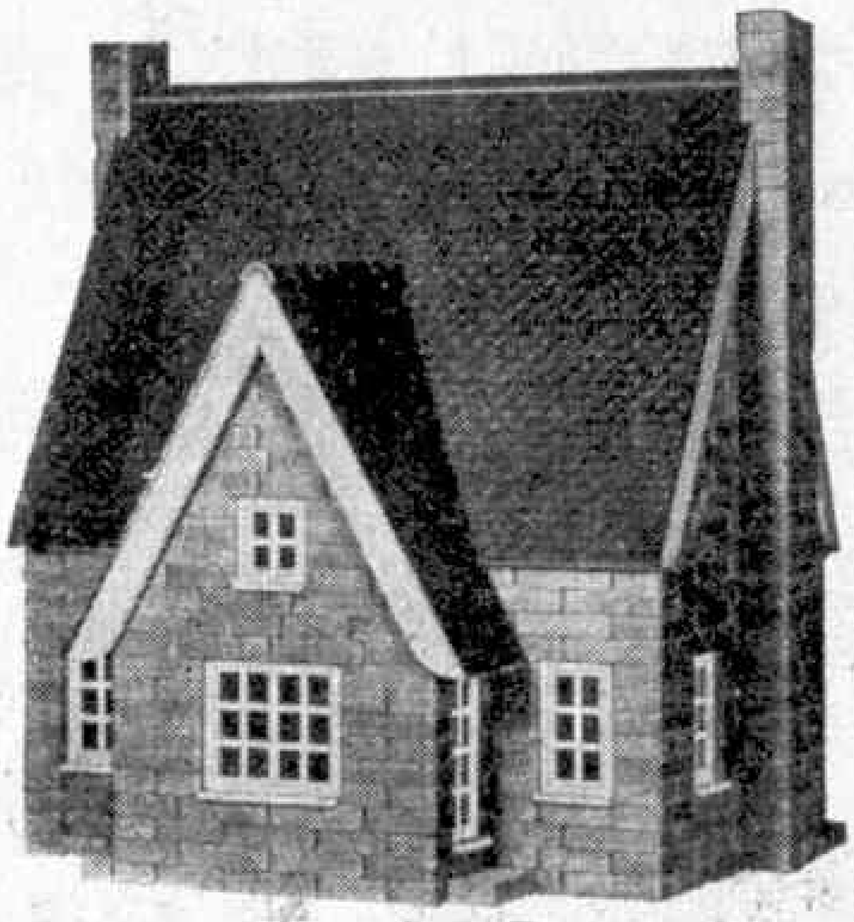

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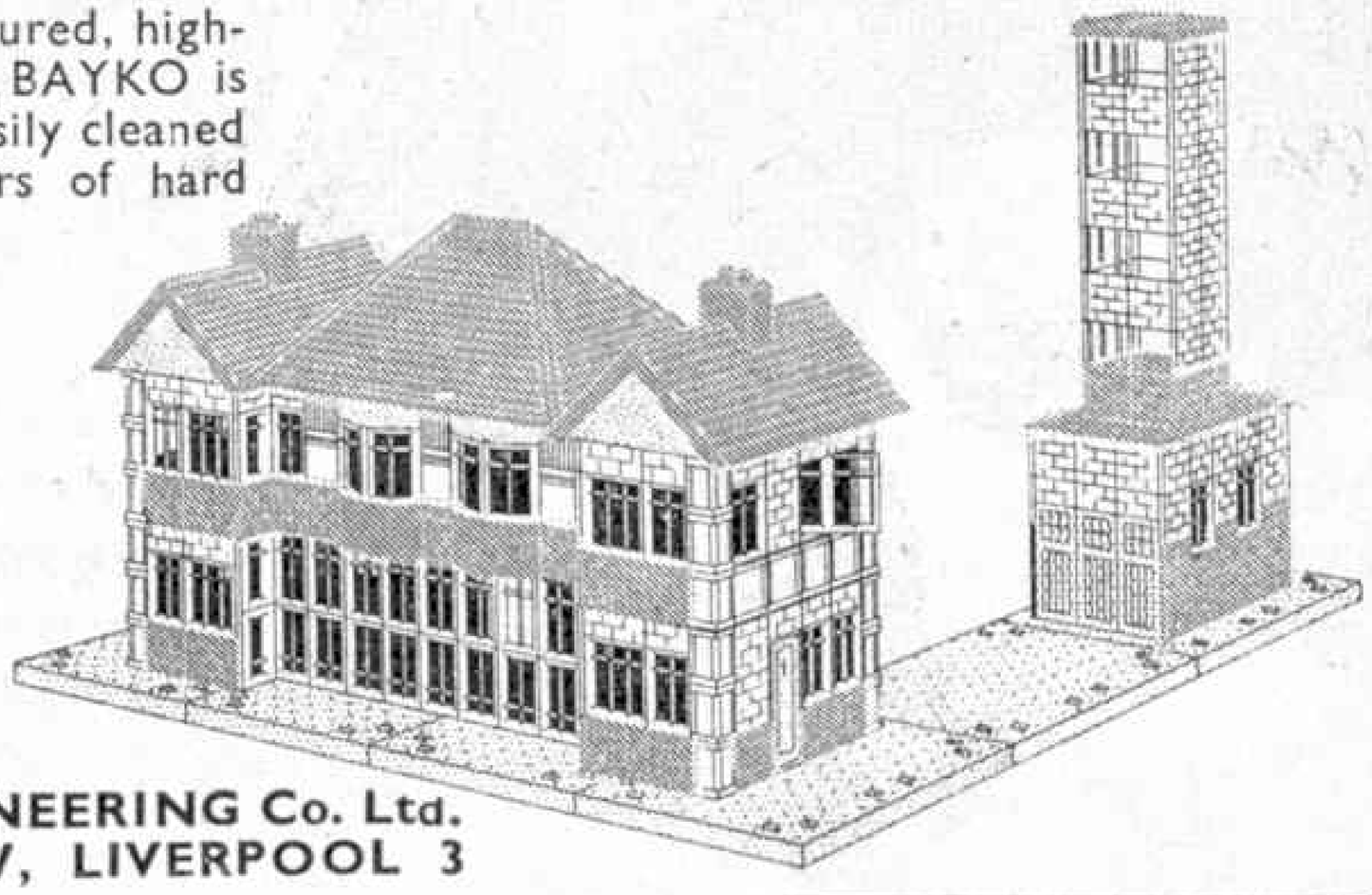

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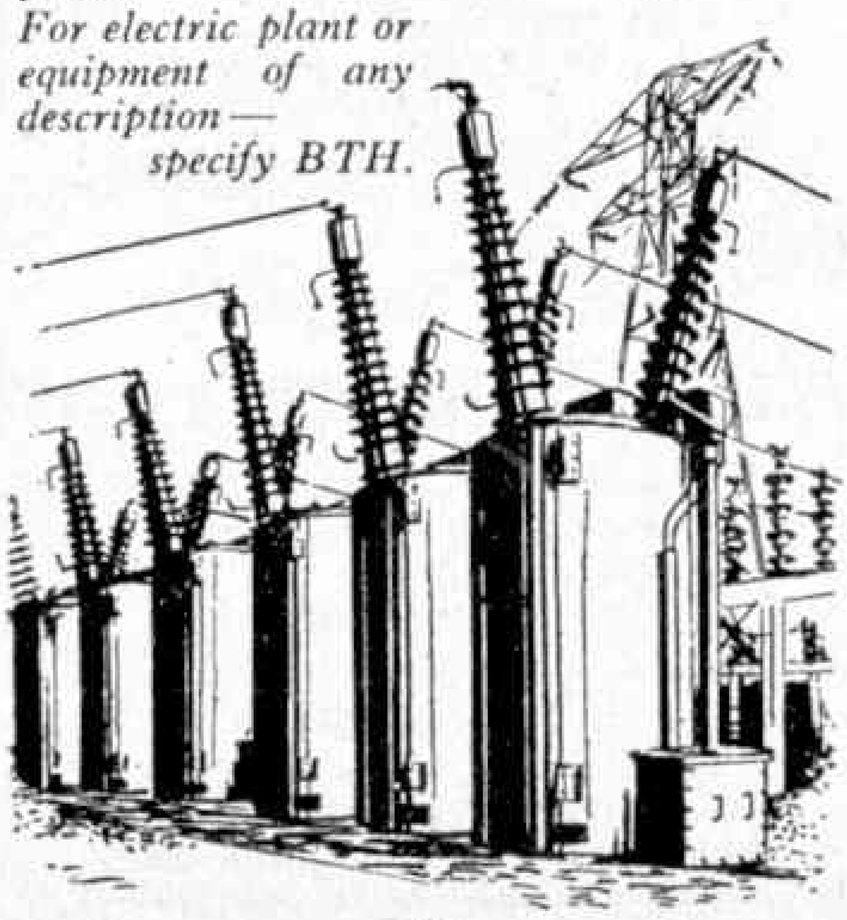

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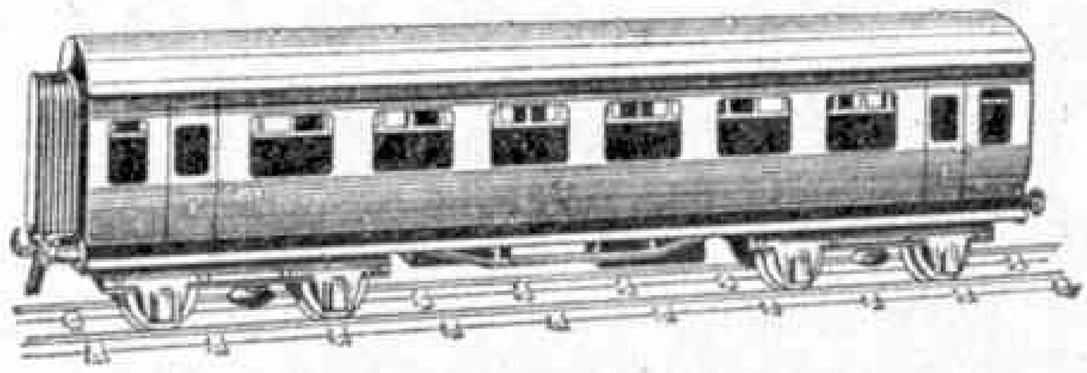

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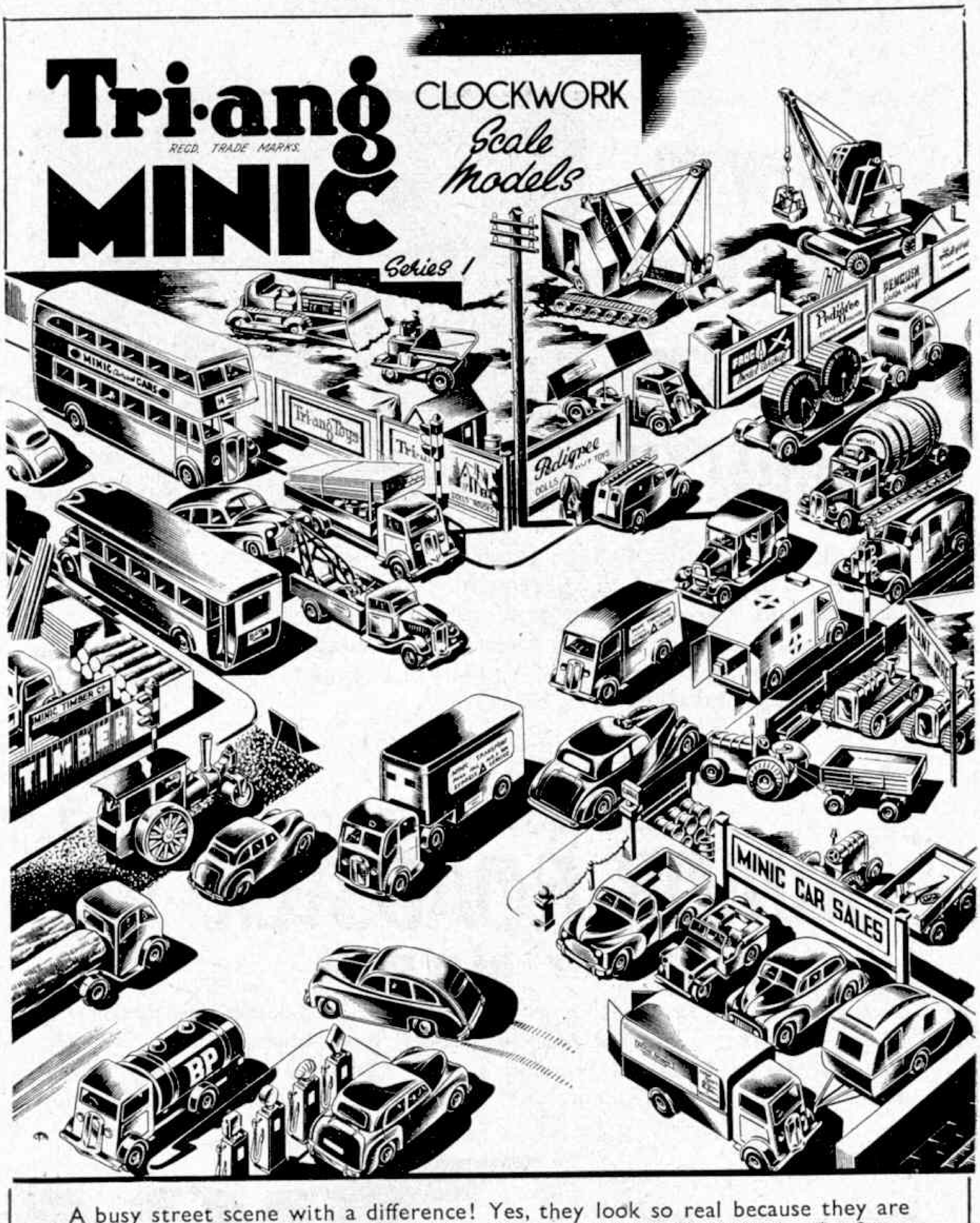

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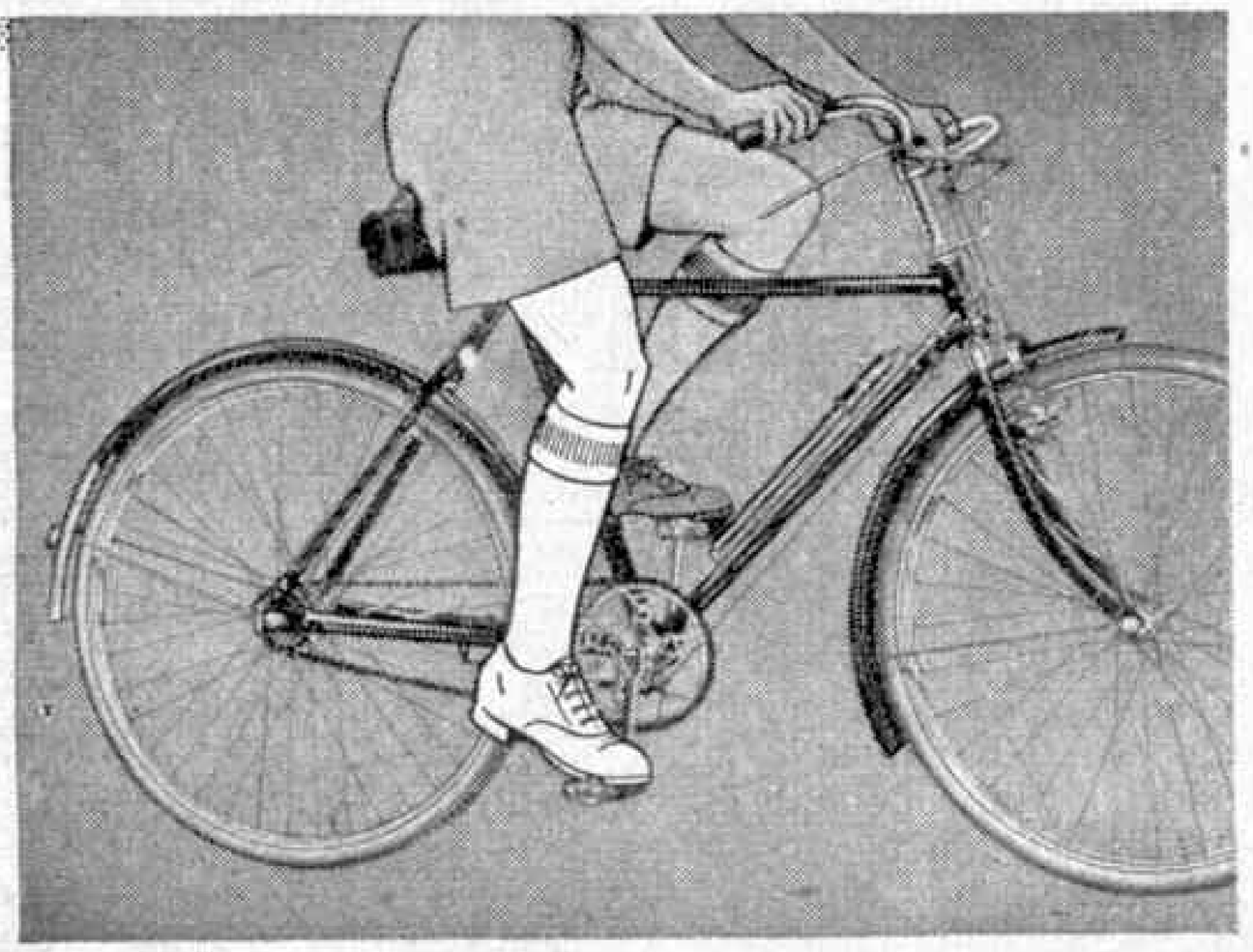

USE THE ball of your foot for pedalling, and bring the toe down on the downward movement. "Ankling" as the experts call it uses the full power of the leg muscles and gives you a much smoother, easier ride. Pedalling with the instep or arch of your foot — as lots of beginners do — wastes effort and is definitely *wrong*.

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MECCANO MAGAZINE

Editorial Office:
Binns Road
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Vol. XXXVII
No. 3
March 1952

With the Editor

Champions of Thames and Medway

I hope you have all enjoyed looking at the cover of this month's issue. There is real romance in the red-sailed spritsail barge, which was long one of the most delightful features of the Thames Estuary and the coasts adjoining it, and the "*Alf Everard*" is a beautiful example. Our cover is from a painting of her reproduced by courtesy of F. T. Everard and Sons Ltd.

Unfortunately the great days of the Thames and Medway spritsail barges are over. When in their prime they competed with each other every year for the championships of the Thames and the Medway, and in this issue Mr. Bowen tells the story of these famous contests.

Speed and Power

The passing of the spritsail barge is a result of the demand of the present age for speed and power. This indeed is illustrated in practically every issue of the "*M.M.*" and the present one is no exception. On page 106 is the first part of an article on a journey of well over 2,000 miles in East and Central Africa by rail and steamship that shows how these forms of modern transport have penetrated into areas that until comparatively recently were inaccessible except on foot. It is little more than 80 years since Stanley found the lost explorer Livingstone at Ujiji, which is very near Kigoma, where the writer of this article reached Lake Tanganyika by rail. Yet Stanley's long journey and the hardships undergone by Livingstone in the unknown depths of Central Africa aroused the greatest excitement throughout the world.

The growth of air travel, as yet our greatest advance in speed, is a further development well illustrated in this issue. Formerly the construction of a road or railway was the first step towards the development of a new country. Now an air line plays the chief part in this, as in the vast development of the uranium mines on the shores of the Great Bear Lake, in the wilds of Arctic Canada. There aircraft carry food and machinery northward and return with loads of concentrated ore for refining at almost any time, even in midwinter when the rivers are frozen.

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By Train to the Roof of Europe

By Bernard Llewellyn

IT was on 26th August 1893 that a Zürich engineer drew a rough sketch of an inspiration that had come to him that very day, a sketch that in the ensuing years became the plan for the Jungfrau Railway. His name was Adolf Guyer-Zeller, and the railway that since 1912 has carried travellers to the roof of Europe is now his monument.

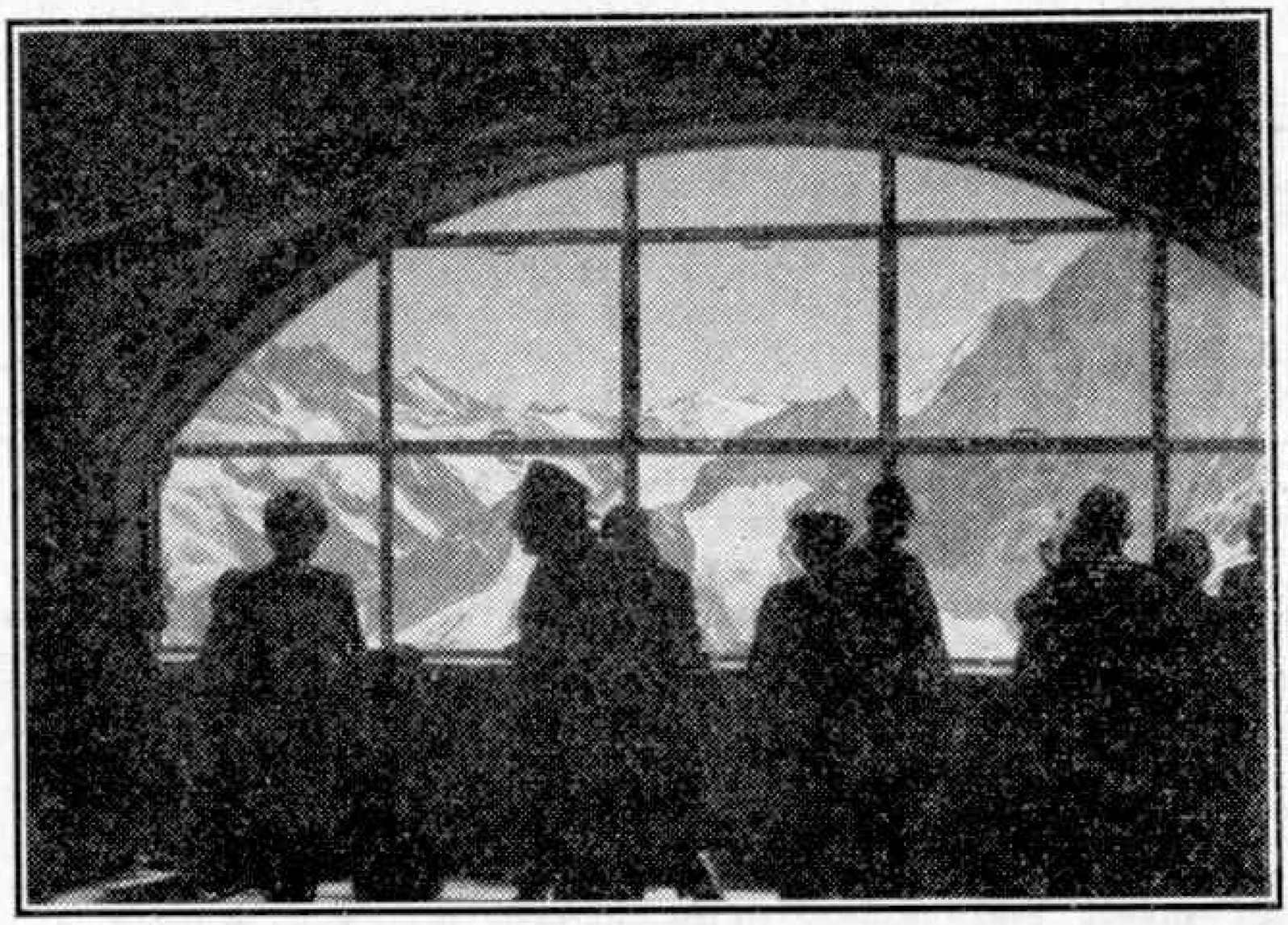
The suggestion of this railway was audacious in the extreme. It is true that the Swiss were pioneers in the construction of mountain railways, and since the 1870s Swiss engineers had been active in building such railways in many other lands besides their own. But this idea of tunnelling for 4½ miles through the great mountain wall of the Eiger fills the layman with awe.

The visitor staying in the delightful village of Grindelwald is ever conscious of the massive, forbidding north wall of the Ogre, for that is the meaning of the German name "Eiger." This soars skyward beyond the valley. Sometimes its great mass of precipitous rock and ice is partly hidden in cloud; but at other times you can trace from the village the routes up the wall that death-or-glory Nazi climbers took in their suicidal attempts to scale it in the thirties.

At night, unless there is a bright moon, the Eiger merges into the surrounding darkness, but usually the visitor can see a light high up on the wall. This shines from the first station in the mountain railway tunnel, from the windows of the Eigerwand, 9,410 ft. above the sea.

You have only to go up to the Little Scheidegg to see why there had to be a tunnel. Up to that point the electric train from Grindelwald runs merrily enough along the one metre gauge cog-wheel track, through Alpine meadows and cool dark green forests, while an occasional avalanche rumbles down the wall of the neighbouring Eiger. But at the Scheidegg you see what lies at the end of the line, which goes curving on upward—the bleak, inhospitable cliffs of the Eiger.

At the Little Scheidegg one changes into another of these two-carriage trains, though there is usually time to visit the shops that nestle around the hotel and railway station, and to photograph the trio of famous peaks ahead—the Eiger, Mönch and Jungfrau. Before you get much nearer these you are going to be glad the carriages are heated.



In the four and a half mile tunnel of the Jungfraujoch Railway the train makes two halts. One is at the Eismeer Station seen here, where passengers emerge from the gloom to get a blinding glimpse of the glories to come.

The Eiger Glacier Station, 850 ft. above Scheidegg, is a gloomier place, shadowed by the vast glaciers and dark rocks of the mountain. The buildings have thick walls and double windows, and rocks are piled on the roofs as protection against the threatening winds. In the winter electric light has to be switched on continuously in the lower storeys, since huge snow-drifts block all light from the windows.

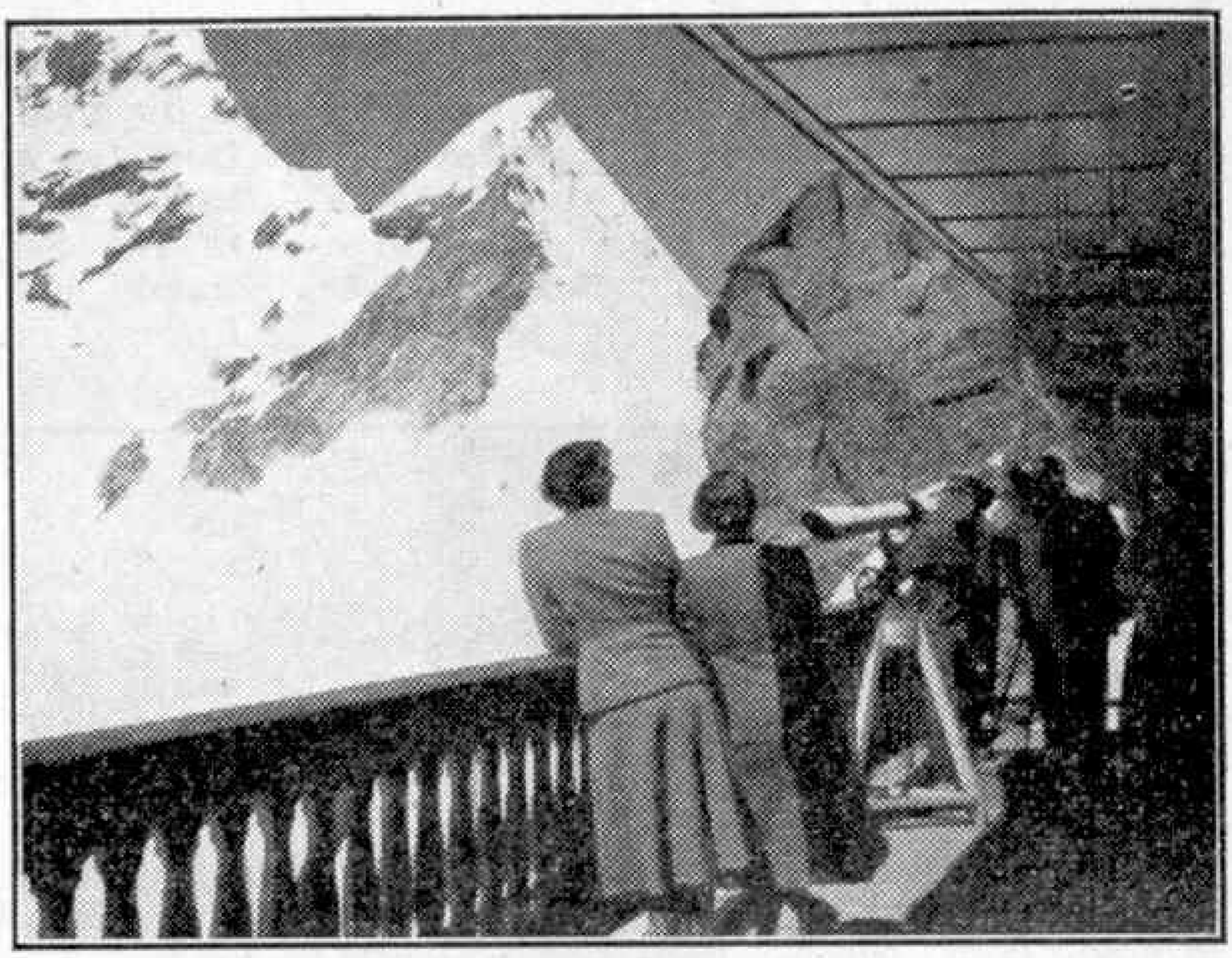
Just beyond here begins a long, cold, 12 ft. wide corridor through the limestone heart of a mountain. The train climbs up it for three quarters of an hour, and the dark world outside the carriages is broken only twice by the intense brightness of

the snow that startles the eyes when, for a few minutes, you alight to stretch your legs at the tunnel stations, Eigerwand and Eismeer. You gaze out of the station windows in awe, for you are among the wonders of the silent heights of snow and ice.

These two glorious views from the tunnel give the passengers an idea of the wonders to come. When they get back into the train, the wise ones start rubbing sunburn cream on all exposed flesh; they know what sun and snow can do to the complexion.

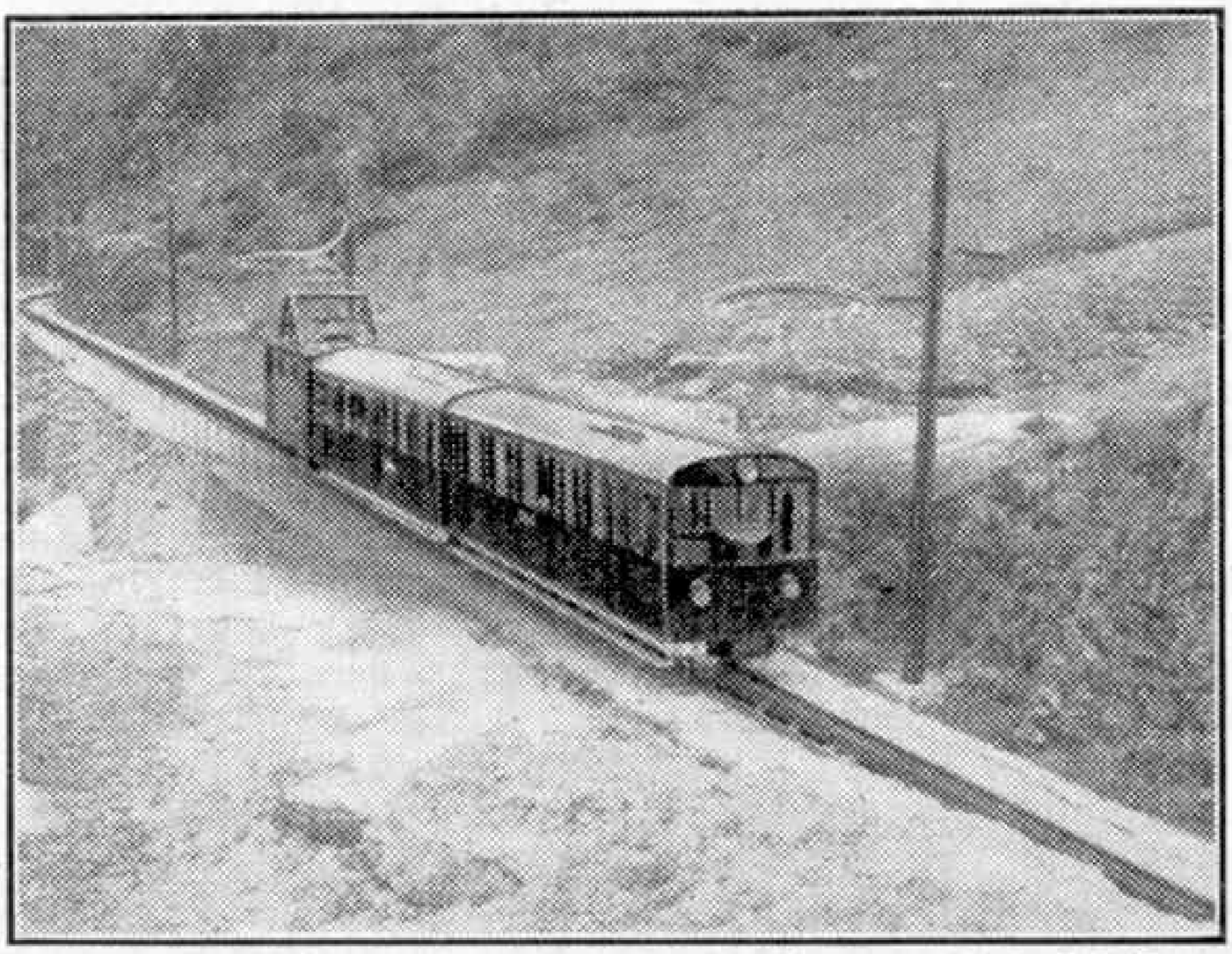
To an engineer, a tunnel is doubtless all in the day's work: to someone like me this one was close to being a miracle. The roof and walls are unsupported by any masonry; they are rough-hewn as they were left by the rock-boring machines that drilled their way into the dark interior of the mountain.

I am told that at first electrically driven machines were used; but when the marble-like mountain limestone was followed by the still harder gneiss, the more powerful Ingersoll pneumatic drills were brought into operation. The underground stations were blasted with marvellous skill, and minor tunnels, through which the rock debris could be removed, had to be driven off the main one.



On the terrace of the Berghaus, Europe's highest hotel. The conical peak is the Mathildenspitze, and the ridge to the left of it leads up to the Jungfrau.

Boring this famous tunnel was a slow, tedious job. Our train did the journey from Eismeer Station to the end of the line at Jungfraujoch in 15 minutes. But this $2\frac{1}{2}$ mile stretch took $4\frac{1}{2}$ years to excavate—nearly six months for every quarter of a mile! It would have taken nearer nine years if day and night shifts had not been worked, but the miracle was accomplished, and now for forty years travellers have been able to go by train to the snow saddle between the mighty peaks Mönch and Jungfrau.



The gradual descent on the adhesion section from the Little Scheidegg.

The line is fitted with all possible safety devices. A brake goes on automatically if a given speed is exceeded; and if for any reason the 650 v. current fails to pulse along the trolley wires, the train can still descend safely, current for braking power being generated by the movement of the train itself. When the gradient exceeds 1 in 16 the cog wheel is used to supplement the adhesion engine. The steepest ascent of all is the last 1,650 ft., on which the slope is 1 in 4.

We came to a stop in the lighted cavern that was Jungfraujoch, and there I got out of the train, in the highest station in Europe, 11,340 ft. above sea level.

It was very cold, and I was glad to move into the dazzling brilliance of the upper air.

In my life I have seen many beautiful snow peaks, like those that come to life with an Himalayan sunrise, but I think I have seen nothing to equal that vision from the verandah of the Berghaus. It seemed as if one had only to stretch out a hand to touch the ring of white peaks, while below a curving sheet of untrodden snow stretched out for over 15 miles to form the Aletsch Glacier, the biggest in Europe.

The Swiss are justly proud of the Hotel Berghaus. It is an incredible place. Its ground floor serves in part as a railway waiting room and ticket office, and from there you set out to explore the fantastic world to which you have been carried.

A lift takes you to the fourth floor, and from there you walk down a tunnel bored into the Jungfrau. It becomes increasingly colder, and at the end you reach the ice palace, which is colder still. Yes, you can skate here, in this miniature rink cut out of the glacier ice 65 ft. below the surface. The supporting pillars, the vaulted roof, the walls, the floor are all ice; and you have not to stay there long to appreciate the plight of someone encased in a refrigerator.

From this observation terrace on the roof of Europe the world of snow and ice lies at your feet.

It is with relief that you go back along the tunnel and turn off for the surface of the great snow plateau at the head of the Aletsch Glacier. Immediately you begin to thaw in the brilliant sunshine. On the saddle between the Jungfrau and Mönch flies the Swiss flag, and standing beside it—if you are lucky with the weather—you can see, looking northwards across Switzerland, a blue horizon on which you can pick out the Vosges Mountains of France and the Black Forest of Germany. To the south is a cordon of peaks guarding the whiteness of the great glacier. And above, perched like an eyrie on a rock high above the Berghaus, is the Sphinx Meteorological Observatory, with terraces commanding an even wider view than those of the hotel.

By means of another gallery leading off from the station, you come to a lift that carries you at the rate of 368 ft. a minute to the Sphinx terraces. And here you stand, looking down from the eaves of Europe, from a vantage point 11,723 ft. in height. You can go no higher, unless you go the hard way—on foot.

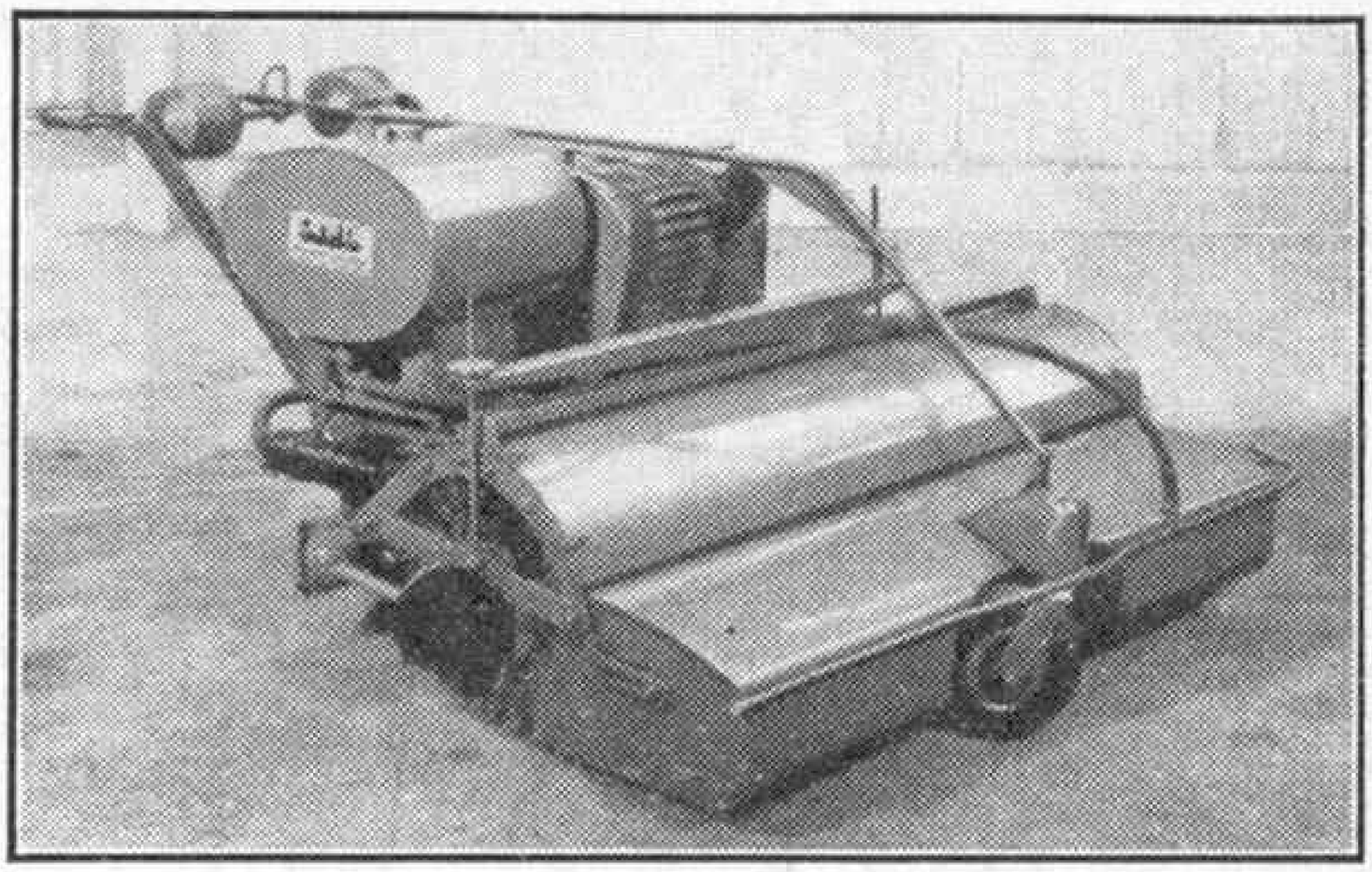
Even the plateau with its Swiss flag seems a long way down from here. Of the active, bustling world below there is no trace. You might be in some Buddhist heaven beyond the snow mountains but for the instruments of the scientists, which relate this eyrie to the familiar world.

I stayed up on the Jungfrau saddle until it began to grow chilly, and then by tunnel and lift I made my way down to the warm well-lit interior of the Hotel Berghaus to catch the next train back to the Little Scheidegg and Grindelwald.

I took another look around the spacious ground-floor of the hotel. Doors led off to the panelled restaurant and a staircase led up to the dining-room, lounge and choice bedrooms, where tourists can enjoy every comfort. In the hall were counters at which you could buy souvenirs and post-cards. Letters posted from here bore the stamp "Jungfraujoch"; in London and faraway New York people receiving them would know that they had been sent from the roof of Europe. Then with a last look at the great glacier I climbed aboard the train.

As the little electric glow-worm moved slowly down into the dark heart of the mountain, I thought again of the men who had excavated the tunnel, and laid the track and cables to open up, after years of toil, one of the most fascinating of all railway journeys. And I took off a metaphorical hat to the genius of that Zürich engineer who had dared to plan a railway up the Jungfrau.

Making Clean Sweeps



HAVE you ever stopped to think how great a part brushes play in our lives? Sweeping indeed must have begun in pre-historic times. To the earliest of our ancestors, dirt probably was just matter in the wrong place, something to be swept or scraped out of the way, perhaps to make room for a fire or in which to sit down comfortably alongside one. Later the need for neatness and cleanliness came to be better appreciated, and brushing and sweeping then went far beyond merely clearing a space in which to do something.

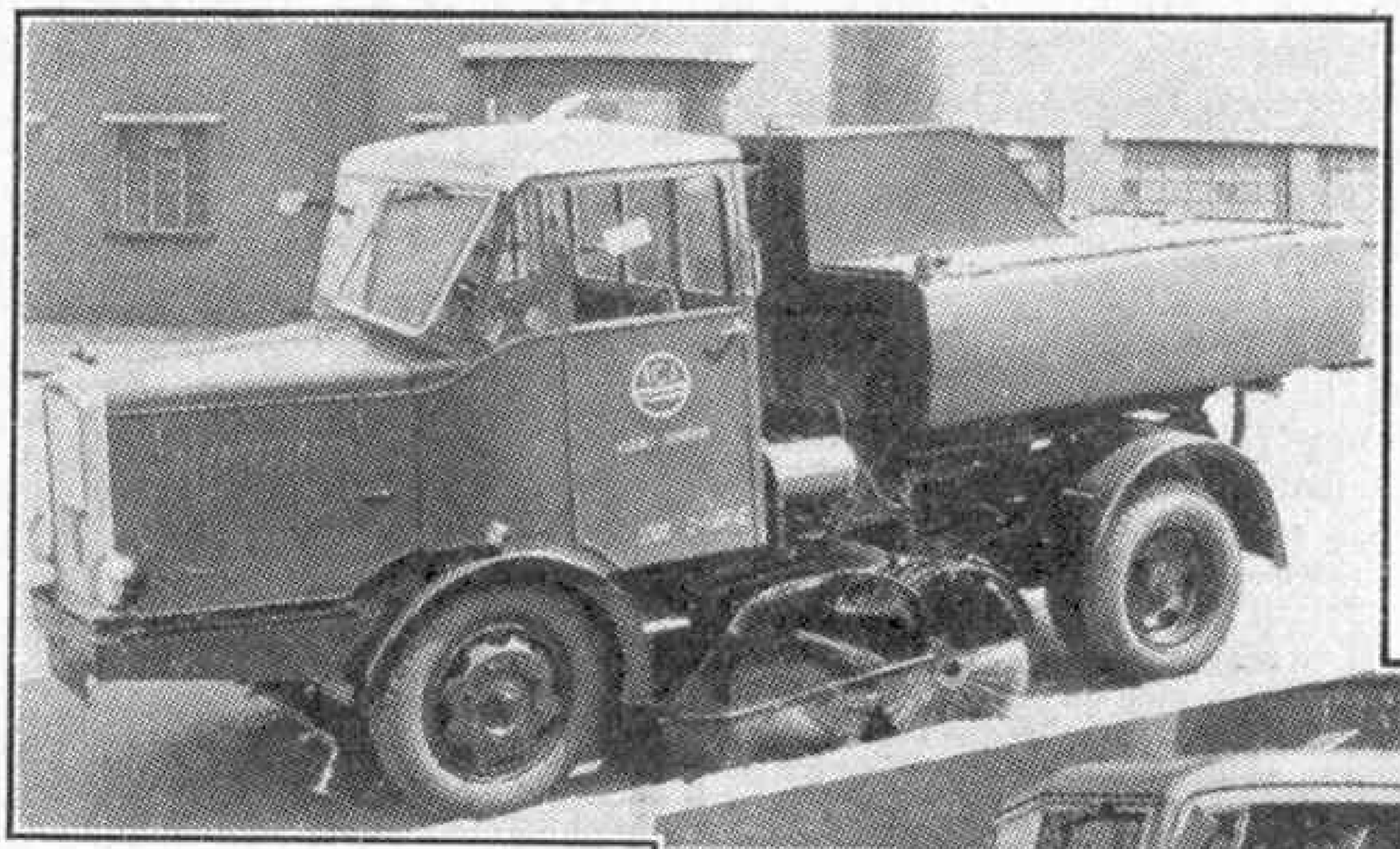
Brushes indeed have done much for civilisation. The magic brooms of fairy tales suggest how venerable a pursuit is their wielding, and they have even found their way into at least one proverb. After all, there is something mystic about a broom, as any witch could tell you.

Large scale brush making by hand seems to have begun in England about 200 years ago, and since the introduction late last century of machines the flood has grown into a torrent. In 1946 15,000 people in England alone were occupied in making brushes and they turned out more than 170 millions of them, with a value of £12,000,000. Britain is only one of the civilised countries of the world, so world production must be positively astronomical.

Nowadays we have brushes, large or small, for an immense variety of purposes. Try to think out how many kinds there are, starting with paint brushes of all kinds, tooth brushes, nail brushes, scrubbing brushes, shoe brushes, hair brushes, clothes brushes and hat brushes, and working up to yard brushes and cylindrical brushes used for keeping the streets of our towns and cities clean. There seems to be a special brush for every possible kind of brushing—although some of them put material on instead of scraping it off!

Like many other age-old duties sweeping has become mechanised. Years ago gangs of men armed with heavy brushes could be seen sweeping their way down our roads and streets, but their weapons have been largely displaced by huge revolving brushes, at first horse-drawn and now ingeniously introduced into a variety of motor vehicles. Two of these modern aids to

(*Continued on page 142*)

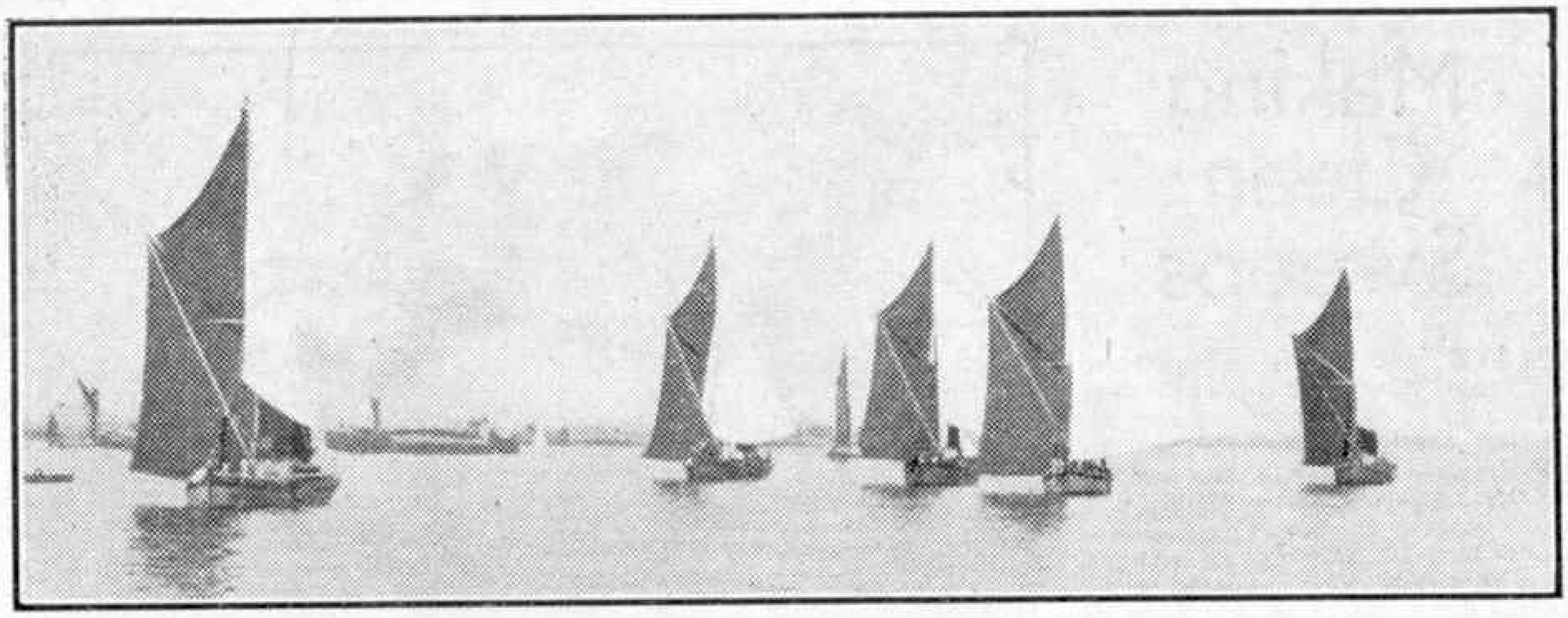


The road sweeper seen above sprinkles water on the road before sweeping and picks up the dirt by means of an elevator.

On the right is the Lewin Mechanical Orderly, a narrow width sweeper, with a hopper body to allow easy removal of the collected sweepings.

At the head of the page is a combined sweeper and sprinkler, driven by a four stroke petrol engine. It brushes sweepings into a container that can be tipped to get rid of them.

Photographs by courtesy of Lewin Road Sweepers Ltd.



The Spritsail Barge Races

Championships of the Thames and Medway

By Frank C. Bowen

THE spritsail barge of the Thames and Medway, although it has sadly declined in numbers during the last few years and is on the point of disappearing, is one of the oldest rigs in the British estuary and coasting trade, and for many years the championship races on both rivers were the great events of the year.

From time immemorial irregular races between barges, and occasionally arranged matches for a substantial stake between two vessels that were claimed to be the fastest on the river, had aroused great excitement. The idea of having properly organised races, starting on the Thames, first occurred to William Henry Dodd, of Hoxton, better known as "Tommy Dodd the Golden Dustman" to whom Dickens drew attention, in the 'sixties of last century. Dodd was very keenly and kindly interested in the bargemen and believed that an annual race for prizes that were worth while would not only give them a sporting annual event to which they could look forward, but also would encourage self-respect and help to raise their status. In addition, he was sufficiently far-sighted to see that it would improve the design of the barges, which in his day were generally punt-shaped, with their foremast rigged in the fashion of to-day, but a small mizen stepped on the rudder head; as they were all tiller-steered this could not be put inboard.

Spritsail barges taking part in a race on the Thames are seen in the illustration at the head of the page. The wind had fallen and the race was ending tamely, with the barges just drifting up on the tide. The illustrations to this article are by the Nautical Photo Agency.

As he was a genuine philanthropist and universally popular, Dodd managed to secure quite a number of supporters for his scheme. These included sportsmen belonging to the Prince of Wales' Yacht Club, who put up a considerable sum of money and, being invited to supervise the races, made the mistake of running them far too much like yachting regattas. This rather puzzled the bargemen and there were very few entries for the first race in 1863. By 1864 they had got hold of the idea, however, and appreciated the sporting attitude of the yachtsmen, so that for the second race no fewer than forty barges were entered.

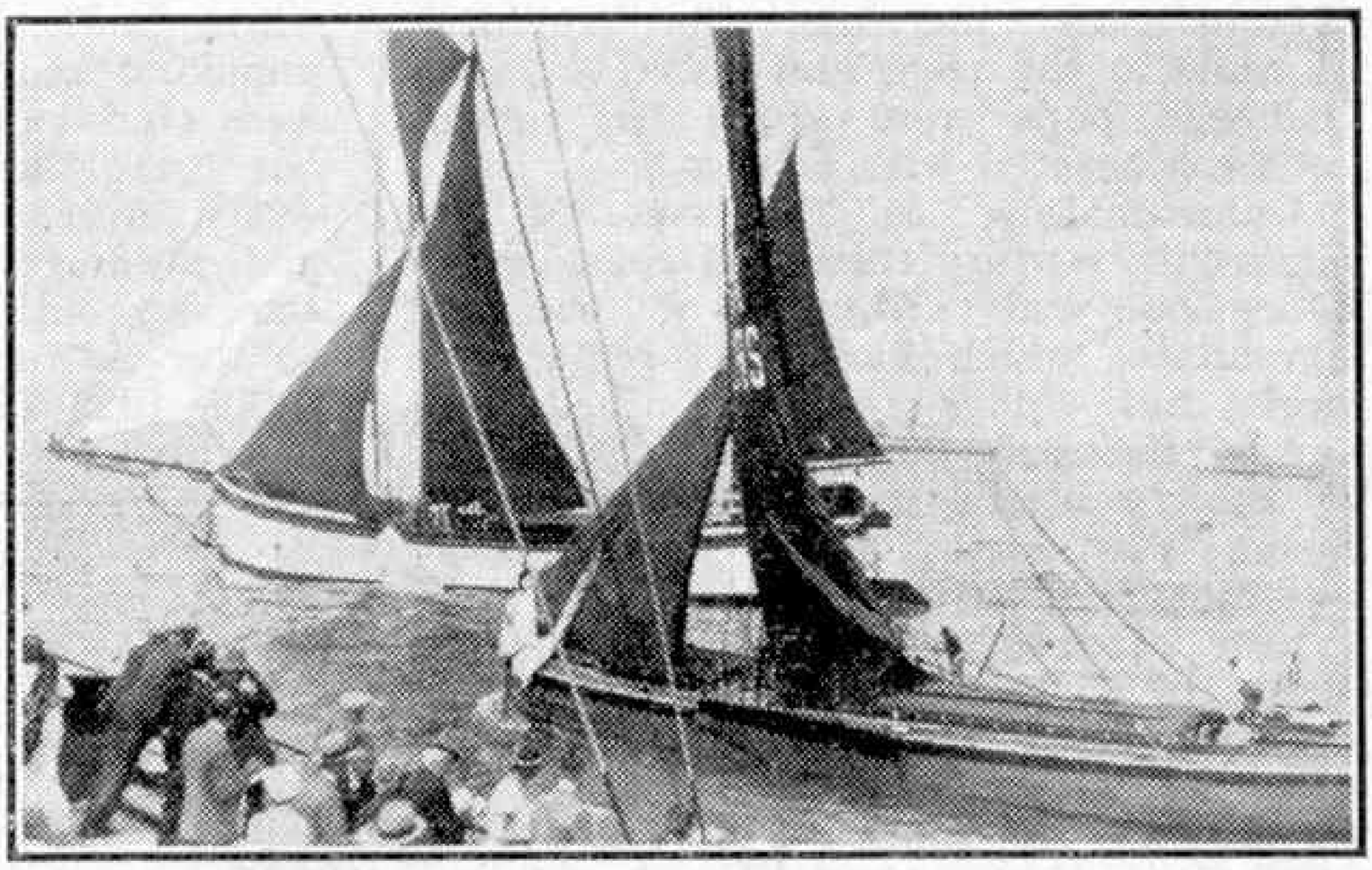
In the third race in 1865 a steamer was chartered as the committee boat, carrying quite a number of outside spectators who, whether they were connected with shipping or not, appreciated the sport and generously put up a large sum in prizes. By that time it was necessary to arrange the race in two classes, one for the bigger barges carrying topsails and the other for the "stumpies," then the great majority of the craft on the river, which were of smaller tonnage. In that year the winning barge of each class was first declared to be the "Champion of the Thames" and was awarded a long pendant, in addition to other prizes for the owners and crew. Championship pendants have been cherished by the riverside descendants of the old

skippers for nearly a hundred years now and, sadly tattered, are to be seen in many homes.

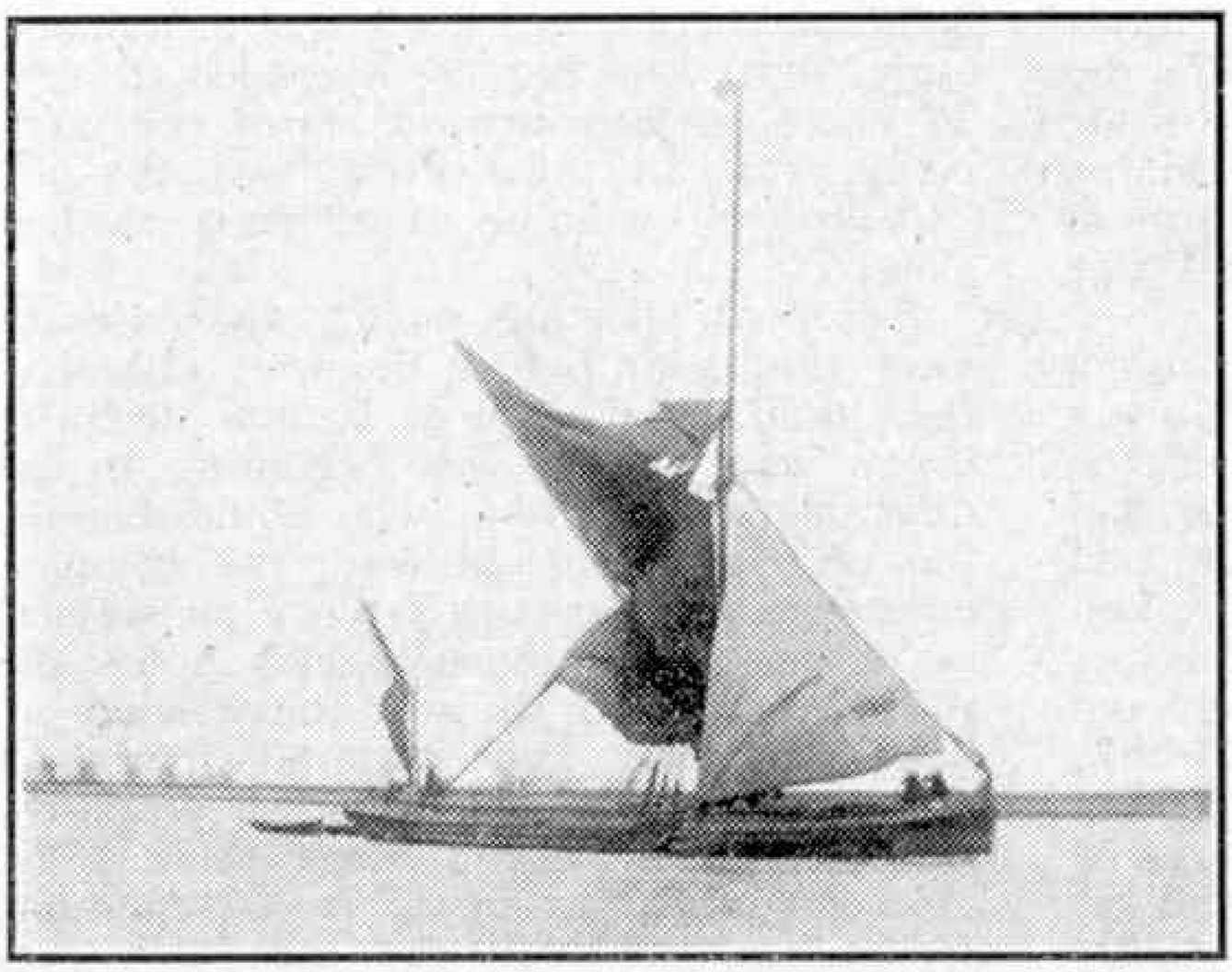
Although the yachtsmen and bargemen had come to appreciate one another, it was obvious that regatta rules were not really suitable for either the barges or their crews. So after the third race the whole scheme was transferred to the control of the Barge Owners Protection Society, and the yachting element only remained as umpires and enthusiastic spectators. Various bodies in London that had to do with the trade of the port supported the scheme generously. That did good to the racing and also to the business side of barge owning, for a friendly feeling was generated that helped business, while keenness to succeed in the races led to considerable improvement in barge design.

There were a very large number of "spritties" on the Thames and the large numbers entered made it necessary to divide them into more classes, although some of these had a short life. After particularly keen races there were very frequently private matches for surprisingly large stakes, particularly when a favourite had been disabled during the main race, when her owner would often issue a challenge to all comers.

This was largely responsible in the 'seventies for introducing a practice that had to be watched very carefully. Dodd's scheme had been started to benefit working barges and their hands, but when enthusiastic owners began to have craft designed with a special eye on the race it threatened to undermine the essential purpose of the race and also to introduce abuses. So every care was taken that only working barges that normally carried cargo should enter. If they could and did do that there was no objection to their being built to original designs, for there was a chance that some might lead to a major improvement in barge construction.



"Alf Everard" passing the "Westmorland" as the two barges round the steamer used as a mark boat. The Corporation of Lloyd's gave valuable prizes to skippers showing the best seamanship when rounding the mark.



The "Giralda" seen here was one of the most successful racing barges of 50 years ago.

The curious thing is that not one of the specially designed barges, some of them the work of famous naval architects, was a success, although of course established barge builders, working by rule of thumb and long experience, produced slight variations that had a great influence on the speed of the vessel without impairing her utility.

The Thames Barge Race had been running for nearly twenty years when the Medway championship was started in 1880, but as the same barges competed in the two, generally within a few days of one another, they cannot be considered apart.

When Dodd died, in 1881, he left a bequest of £5,000 to the Fishmongers Company for the purpose of carrying on the Race, and for that purpose only, and that addition to the prize list contributed greatly to the wonderful racing in the 'eighties and 'nineties. The number of competitors varied greatly according to circumstances, including the condition of trade in the port, and some very fine challenge cups were given by various bodies connected with shipping.

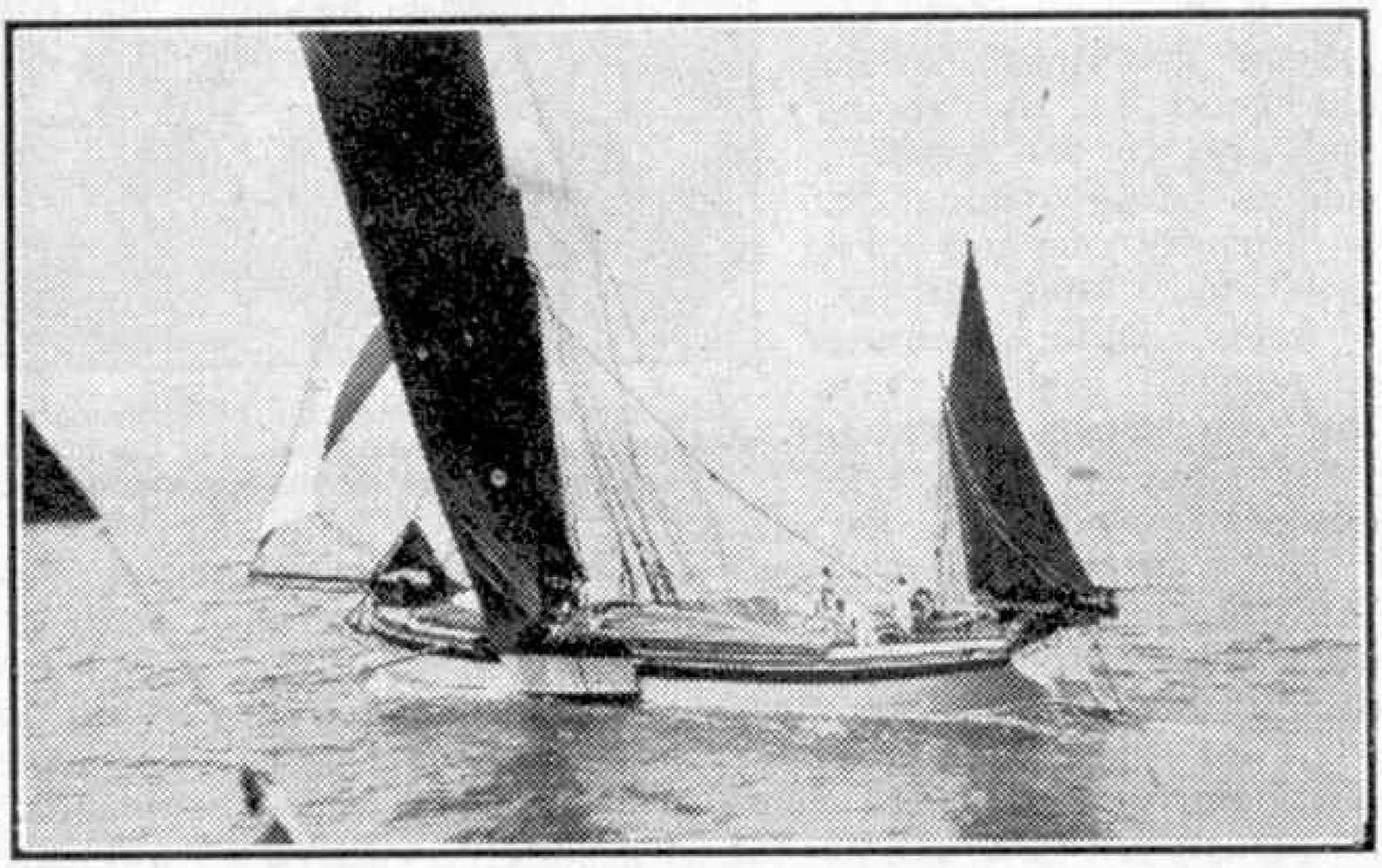
Unfortunately, at the end of the nineteenth century there was considerable dissension and criticism of the old committee, which had done remarkable work, but things were smoothed over and in the early days of the twentieth the racing continued to be most successful. When efforts were made to tighten up the rules many barges were disqualified, and there was so much dissension that the races were abandoned after 1909.

This was a sad loss to the Thames and Medway, but there appeared to be no way of avoiding it on account of the very bitter feeling that had arisen and which threatened to make the scheme anything but a benefit to the barges and their people. By 1927 this bitter feeling had died down, however, and by the enthusiastic work put in by some of the principal men in the business the races were revived, under the control of the Trustees of the Thames Sailing Barge Match Fund.

By that time the number of sailing barges on the two rivers had already declined very greatly and some of the stoutest supporters of the old races had either gone out of business, or had converted their sailing barges into towed lighters. Enthusiasm and good feeling produced quite a fair field, however, and the first of the new races in 1927 was divided into two classes, the coasting barges of not less than 70 tons net, to be sailed by a master and five hands, and the river class of under 70 tons, with a master and three hands.

Among the coasting barges the big post-war class of four steel barges built by F. T. Everard and Sons Ltd. were conspicuous, the *"Ethel Everard"* and *"Fred Everard"* racing in that year. Their size was a handicap to them in windward work and they were beaten by their smaller consort the *"Cambria."* Nevertheless, with their tall masts and white hulls, they were always a great popular feature of the race, whether they were placed or not. In the "River" class one competitor was the old *"Challenger,"* which won the championship in 1867, and although she finished last the fact that she could race at all was a fine tribute to the old-time builders.

The 1928 Thames Race was sailed in a gale and there was a good deal of damage aloft, but the barges averaged nearly 12 knots on the outward leg of the race. Next year the great event was the old *"Challenger"* winning third prize in her class.



The "Sara," victor in many Thames races, was exhibited off the South Bank site throughout the Festival of Britain last year.

Excellent sporting racing was enjoyed year after year before the war, although the number of sailing barges declined every year and it was beginning to be difficult to find crews who could handle the vessels in the old way; the younger men were showing a preference for service in lighters, with more regular hours on the river. During the war the wastage in both personnel and material increased rapidly, and when in 1946 it was proposed to revive the Thames Race there were obvious difficulties apart from economic conditions. In 1949 the idea was put forward again, but by then practically all the surviving

(*Continued on page 142*)

BOOKS TO READ

Here we review books of interest and of use to readers of the "M.M." With certain exceptions, which will be indicated, these should be ordered through a bookseller.

"BRITISH TRAINS PAST AND PRESENT"

By O. S. Nock, B.Sc. (Eng.)
(Batsford. 16/–)

The theme of Mr. Nock's book is neatly summarised in the title, for it is trains and their running from the early days of railways until now about which he writes. At the same time, plenty of railway history of the more interesting kind, and many anecdotes and personal experiences, add to the interest of the general account.

Train travel of a century or so ago, passenger accommodation and locomotive types are first described, with stories of the light-hearted methods of conducting traffic and the primitive working arrangements of early days. An account follows of the great days of railway pre-eminence, from 1870 to the first World War. This was a period of great development that saw the coming of the corridor train, the sleeping car and the dining car, and the railways prospered under the direction of famous personalities.

During this period locomotives progressed from the simple single-drivers of 1870 to the 4–6–0s and the "Atlantics" of 1914. The superheater became an essential part of steam locomotive equipment, and the latter half of the period saw the evolution of the Churchward principles at Swindon that have provided the basis of modern locomotive design. The locomotive in those great days is given a chapter all to itself, and a fascinating one it is. The story of the grouping of the old companies and the formation of the nationalised system brings this authoritative yet very readable account to a close.

Illustrations, well chosen from many sources, are plentiful, and include several plates in colour.

"PHOTOGRAPHY AT SCHOOL AND COLLEGE"

By M. K. Kidd (Focal Press. 7/6)

There has been a boom in amateur photography during the past year, and a spate of new handbooks designed to help the new enthusiast to obtain the best results from his efforts. As the title indicates, this one is intended particularly for the amateur photographer at school or college who, with lots of homework to limit his leisure, is glad to make use of any short cuts to success in his hobby. It covers a wide field, from points to consider when buying a camera and types of camera and lens to outdoor, indoor, flash and colour photography, the equipment of a dark room and developing, printing and toning processes. There is good advice on making cards and calendars, starting a camera club, and marketing your prints; and finally a very practical chapter on photography as a career. Many neat line drawings explain points dealt with in the text.

"THE WITCH OF REDESDALE"

By Winifred Finlay (Harrap. 8/6)

The setting of this unusual and exciting story for older readers is the Border country in Northumberland. The young people concerned are Peter, Bryan and Sally, who set out from Newcastle-on-Tyne on a cycling holiday toward the Border, with the village of Redeshaugh as their destination. They stay the first night at a Youth Hostel in a remote hamlet high on the moors, and there receive a mysterious message warning them against going on to the village. On the final lap of their journey they make the acquaintance of "Auld Madge," a witch-like old woman, and soon afterwards find themselves involved in exciting adventures in which their fate is closely bound up with that of "Auld Madge."

The book has a coloured frontispiece, and a map of the locality in which the story is set.

"THE A.B.C. OF BRITISH ROAD SERVICES"

(Ian Allan. 2/–)

Vehicles bearing the British Road Services insignia and titles are now a common sight on our roads, and this handy little book explains how the organisation works, with its Divisions, Groups Units and Departments. The significance of the colours, markings, codes and so on are explained, and a knowledge of them adds to the interest of a road journey or a walk.

Typical B.R.S. vehicles are plentifully illustrated, and the last few pages are devoted to a B.R.S. vehicle-spotting game.

"MODEL STEAM LOCOMOTIVES"

By Henry Greenly
(Cassell and Co. Ltd. 15/–)

The late Henry Greenly was a pioneer of small locomotive design and to his efforts the miniature railway hobby owes a great deal. The present volume is a completely revised edition of one of his best known books, that has long been regarded as a classic of its kind. In it the author deals as easily and as completely with Gauge 1 locomotives as with those that have a real job to do, such as the one-third full size "Pacifics" of the Romney, Hythe and Dymchurch line, which were built to his designs.

The book is fully illustrated with reproductions o photographs, drawings and dimensioned sketches.

"DECORATING CRAFTWORK"

By Mary Abbott (Muller. 6/–)

The average home craftworker is not an artist, and needs the practical instruction of a book such as this when trying his or her hand at decorating things for the home. The subjects dealt with here are the decorating of chinaware, glassware, leather, fabrics and woodware. In each case the author explains what materials and tools are needed, and methods of carrying out the work that will ensure pleasing and artistic results. Helpful line drawings add to the value of the book.

"TROPICAL FISHKEEPING"

(Spratt's Patent Ltd. 1/6)

Readers who want to know how to set up and maintain a tropical aquarium will find this handbook a practical and interesting guide. It explains simply what apparatus is needed, how to fix up the tank and to arrange satisfactory lighting, heating and water supply, and which aquatic plants to get for the tank. The kinds of fish for a tropical aquarium are detailed and coloured illustrations make identification easy.

Fish foods and feeding also are dealt with, and there are hints on the general mantenance of the aquarium and on coping with such emergencies as illness of the fish.

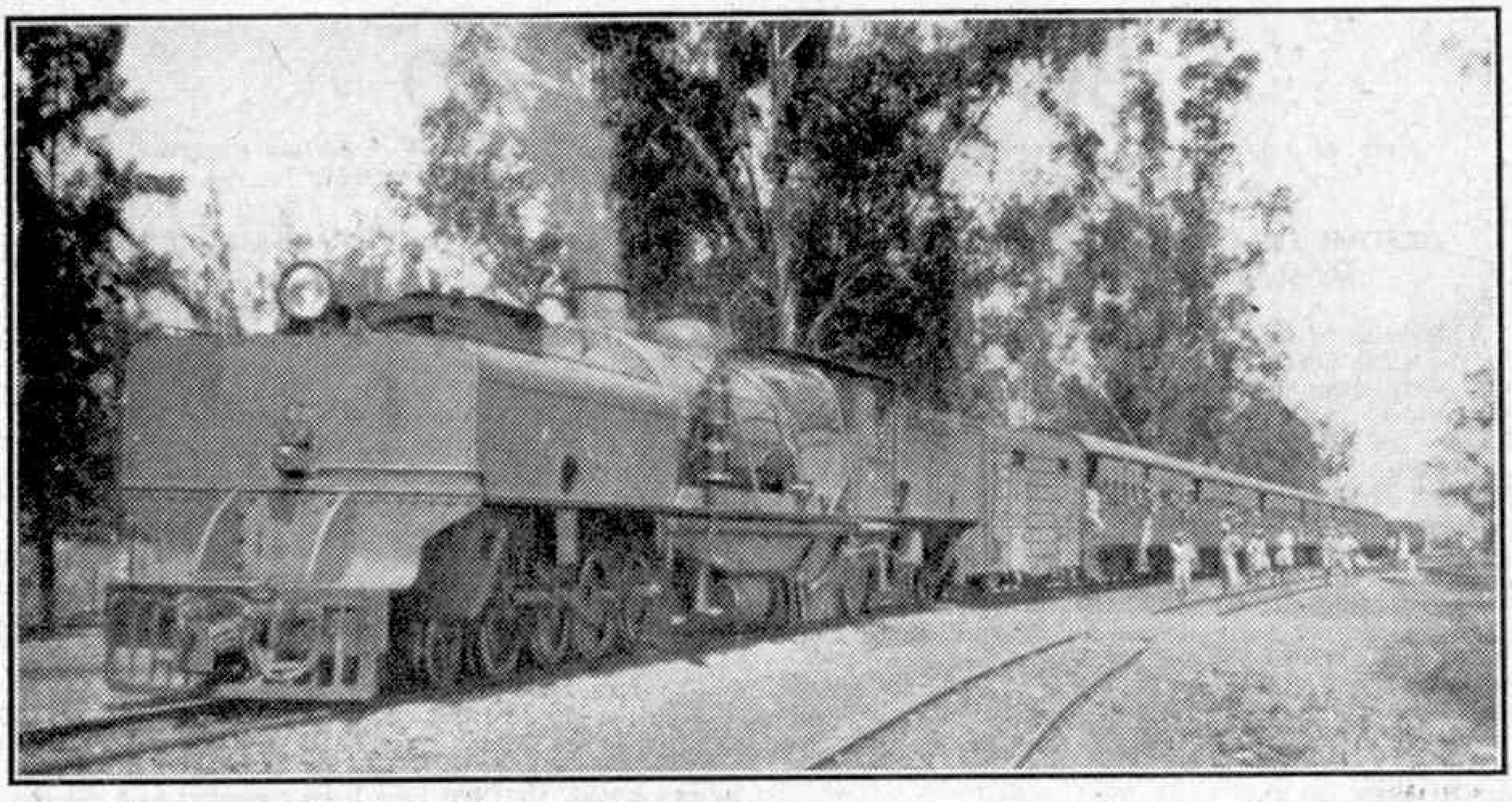
Copies of the book can be obtained from any Spratt's stockist, or direct from Spratt's Patent Ltd., 41/47, Bow Road, London E.3, price 1/8 post free.

"LONDON'S UNDERGROUND RAILWAYS"

(Ian Allan. 2/6)

London's Underground Railways are a never-ending source of fascination and this pictorial survey by O. J. Morris provides a remarkable selection of subjects well reproduced from photographs. Locomotives and rolling stock from the pioneer steam days to the most recent "tube" vehicles are illustrated, as are stations and signalling items.

The reproductions on the whole are good and the front cover is appropriately finished in red, with a head-on view of a tube train enclosed within the well-known "Underground" symbol



A Rail Trip in British East Africa

By D. M. S. Fairweather

SOME years ago I had the opportunity of travelling from Nairobi, the capital of Kenya, to Lusaka, the capital of Northern Rhodesia, by rail, road and steamer services. The first section of the journey was by the metre-gauge Kenya and Uganda Railway, now part of the East African Railways, to Kisumu, a port on the north-east corner of Lake Victoria. At Nairobi the headquarters of the K.U.R. were situated in a large, fine-looking building just outside the station. The station itself is the largest on the system and adjoining it are extensive goods and marshalling yards, a running shed with mechanical coaling plant, and the locomotive, carriage, and wagon repair shops of the system.

The photograph above shows a Kenya and Uganda 4-8-2 + 2-8-4 "Beyer-Garratt" on a Kisumu-Nairobi mixed train at Muhoroni, Kenya.

We left Nairobi on a Friday evening, our train hauled by "Beyer-Garratt" 4–8–2 + 2–8–4 No. 72 "*Kiambu.*" The single-track line climbed steadily on a ruling gradient of just over 1 in 45 and it had grown dark by the time we reached the summit, some 30 miles from Nairobi. At a station appropriately called Escarpment, the line came out high up on the side of the Rift Valley, with what in the moonlight looked like an almost sheer drop to the valley floor 1,600 ft. below. Along the escarpment the brakes ground streams of sparks from the wheels, the flanges screeched and the headlight of the engine swung round from left to right as we took the curves. Then the brakes ground even harder and speed dropped to 10 m.p.h. as we rumbled over a high curved viaduct. Once across, there was a hiss of air as the brakes were released, the wheels clattered faster and faster, and then the brakes went on again as No. 72 swung into the next bend. We crossed several more steel trestle viaducts as we ran down the wooded, broken hillside.

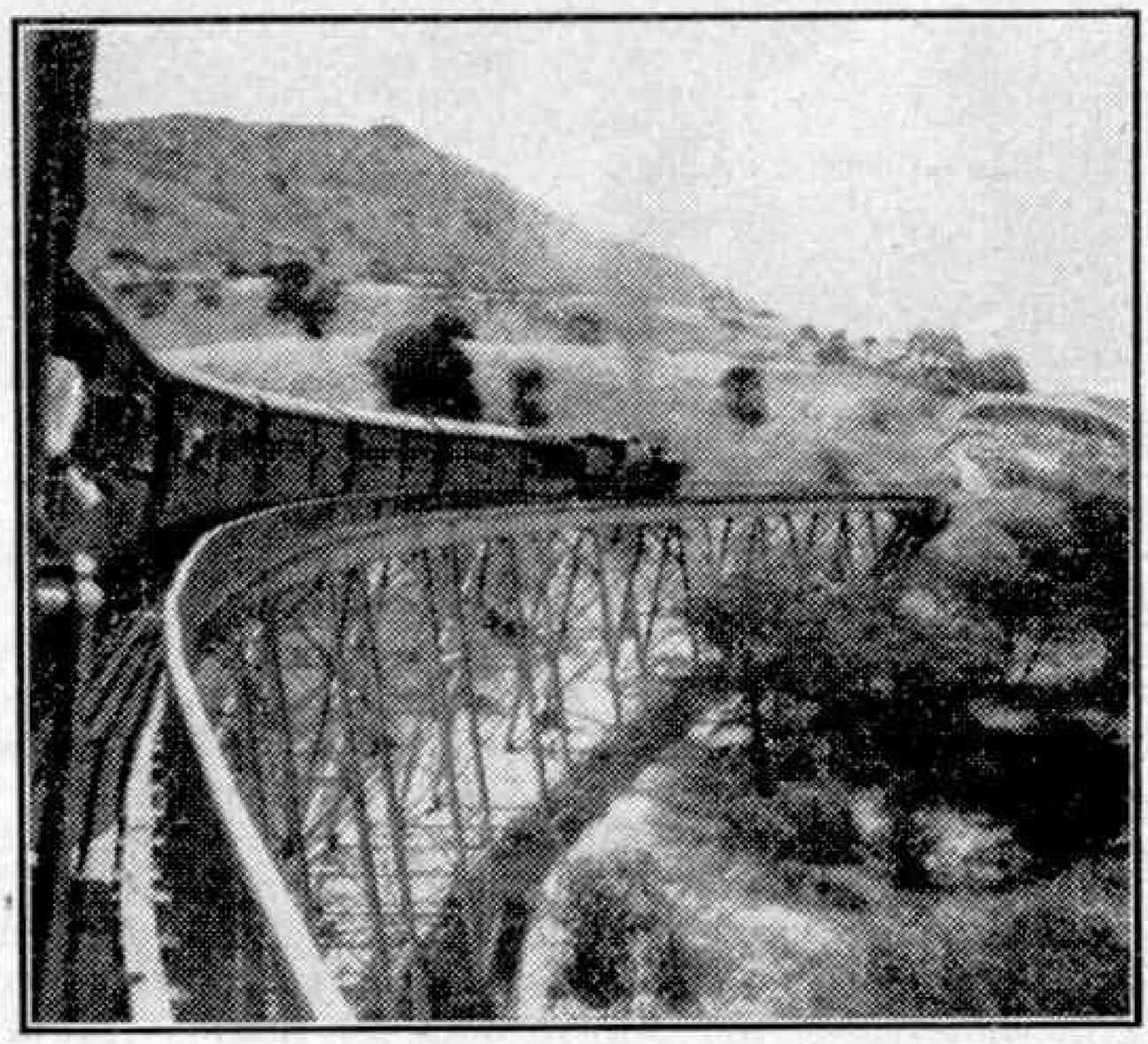
About 2 o'clock in the morning we reached Nakuru, an important junction, 122 miles from Nairobi, where the line to Kisumu leaves the main line to Uganda. Here our train was remarshalled and another engine, 4–8–0 No. 203, came on. By daylight we were climbing up the Mau Hills, and at 8.40 a.m. we arrived at Mau Summit station, 8,322 ft. above sea level. In the next 57 miles the line descends 4,050 ft., winding its way around the hills and valleys in a most bewildering manner, with frequent viaducts and one short tunnel, which held the distinction, at that time, of being the only tunnel on the K.U.R. Once clear of the hills, a fairly straight and level run brought us to the head of the Kavirondo Gulf, an arm of Lake Victoria, on which the port of Kisumu is situated.

Kisumu is the base for the K.U.R. fleet on Lake Victoria, with workshops and a dry dock beside the quay. In addition to several tugs and lighters, the three principal vessels of the fleet were in harbour. These were the "*Usoga*" and the 1,200-ton "*Rusinga*," single-screw vessels launched in 1913 and 1914 respectively, and the "*Nyanza*," a twin-screw vessel of 1,146 tons launched in 1907. The first two are passenger carrying ships maintaining a weekly round-the-lake service in each direction. The "*Nyanza*" had been out of use for some years before the war, but was recommissioned in 1942.

After an overnight stay in Kisumu, we embarked on the "*Nyanza*" early on Sunday morning and sailed down the Kavirondo Gulf out into Lake Victoria. About eleven the next morning we reached Mwanza, in Tanganyika, at the southern end of the lake, which is the terminus of the Tanganyika Government Railways line from Tabora. Passenger traffic on this line amounted to two trains each way per week, with restaurant car and through coaches to Dar-es-Salaam. Our train left that evening, behind a Vulcan Foundry wood-burning 2–8–2 No. 400, built in 1926.

Shortly after leaving Mwanza we reached a level crossing. Like nearly all level crossings in Africa it had no gates, but it was dignified by an African custodian armed with a large bell, which he solemnly rang while the train was passing over the crossing. The train stopped at all stations and halts, shunting where required. After dark, it was very pleasant to sit on the open end platform of the coach listening to the steady click of the wheels and watching the two fiery trails of sparks from the engine, one from the chimney, the other from the ashpan, stretching back between the rails and winking in the distance behind the train.

Tabora was reached on the Tuesday morning, about 10 o'clock, and there we

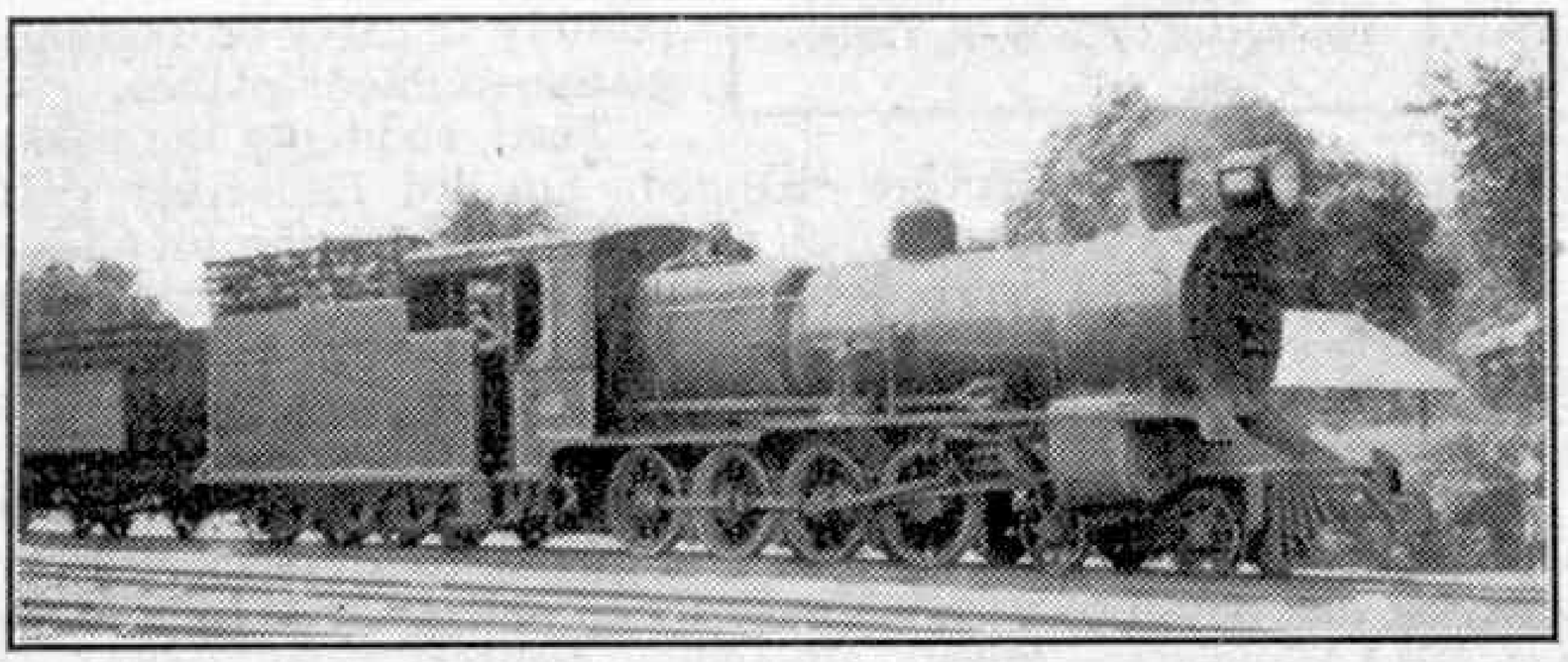


"No. 10 down mixed" headed by 4-8-2+2-8-4 No. 46 passing over a slender viaduct between Fort Ternan and Lumbwa.

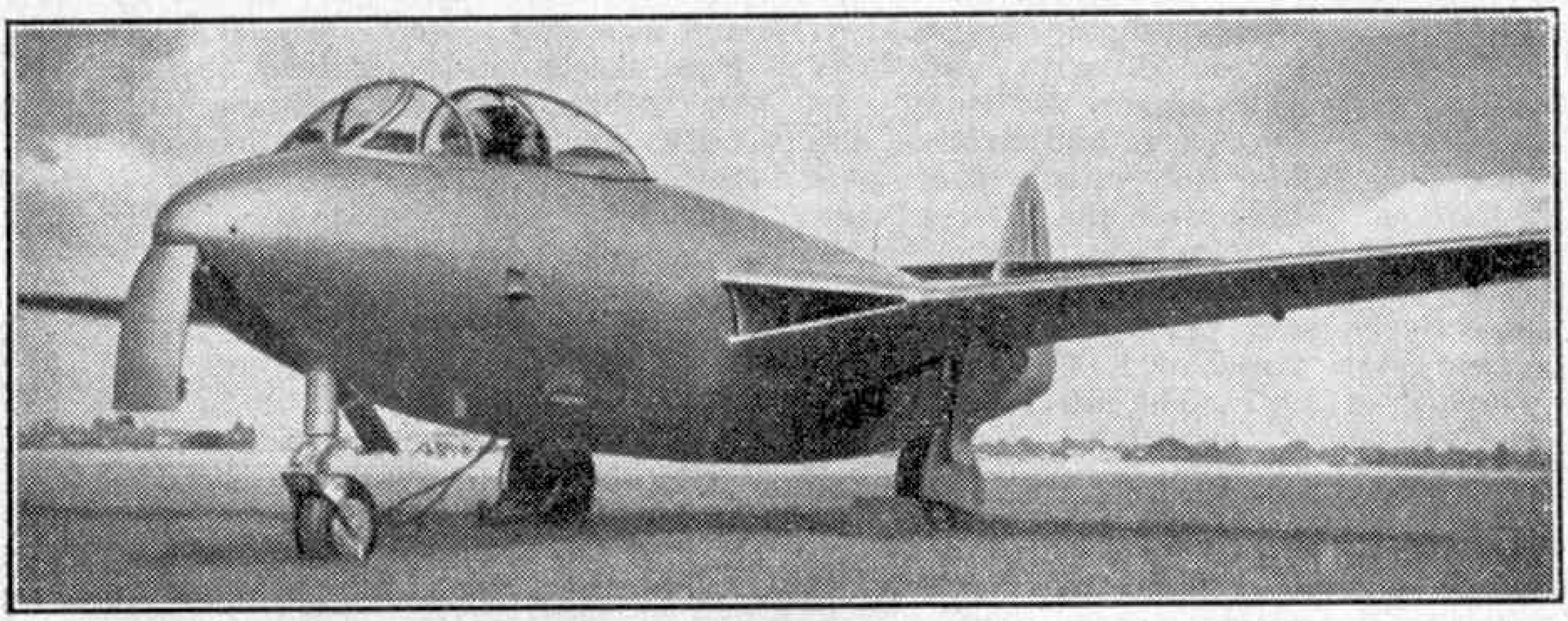
detrained to wait till the afternoon of the following day for our westward connection to Kigoma. Our train from Mwanza was combined with an eastbound train from Kigoma to go forward to Dar-es-Salaam, and the station presented a very busy appearance while the trains were being remarshalled.

Tabora is an important centre and the running shed provides motive power for the lines to Mwanza and Kigoma, then averaging one train each way per day, and the main line as far east as Dodoma, which carried two or three trains each way per day. Principal passenger and goods traffic was worked by 4–8–2s and 2–8–2s. Shunting and other work such as the haulage of fuel trains was done by 4–8–0s and Sentinel shunters.

Tabora was the starting point for my journey onward to the Belgian Congo, which I will describe next month.



Tanganyika Government Railways 4-8-0 No. 200 at Mwanza. This engine was built in 1915 for India, but was diverted to Africa on the way out.



Fighter Family

By John W. R. Taylor

JUST outside the lovely little village of Esher in Surrey, at the top of a green hill, set among cyprus and pine trees, stands Claremont House. It was built for Clive of India and became one of Queen Victoria's favourite retreats; yet its atmosphere has not always been peaceful. The dusty lane that runs by the foot of the hill once rang with the hoof-beats of highwaymen's horses—for this was the old Portsmouth Road—and during World War II there was born in Claremont a succession of formidable weapons which helped to preserve Britain's freedom and greatness, including the "Tempest" fighter, which did much to save us from the menace of Hitler's flying bomb; the "Sea Fury," which has fought so well under the United Nations' flag in Korea; and the P.1040, first of a new family of jet-powered fighter 'planes, under whose wings these islands will be safe in the years ahead. For Claremont was, during the war years, the home of the Hawker Aircraft company's design team, under the inspired leadership of Sydney Camm.

The picture above shows the Hawker P.1040 prototype on the airfield at Langley. Photograph by J. W. R. Taylor.

His P.1040 was not the first Hawker project for a jet 'plane, for as early as 1941 the company had investigated possible design layouts for a twin-engined bomber and a single-seat fighter, using Power Jets Whittle engines. But the P.1040 was the first to be carried through to the detail design stage, so that late in 1944 Hawkers were able to offer the Royal Air Force a fighter that made every other aeroplane in the sky look old-fashioned. The P.1040 was a thing of beauty from its sleek pointed nose to its rounded, typically-Hawker fin and rudder. Nor were beauty, speed and fire-power achieved at the expense of range, as was the case in some earlier jet 'planes, for the designers were careful to provide an unusually large supply of fuel for the aircraft's powerful "Nene" turbojet. The unorthodox engine installation helped this, as Hawkers decided to exhaust the jet gases through twin pipes in the wing roots, leaving plenty of room for fuel inside the fuselage.

Unfortunately, with the war drawing to its close, the Air Ministry were not in the mood for ordering new fighters. They still needed lots of "Tempests," and Glosters and de Havillands were already producing enough "Meteor" and "Vampire" jet fighters to equip Fighter Command. So Hawkers were told politely to carry on building piston-engined 'planes.

Then, suddenly the whole picture changed. On 3rd December 1945 the Royal Navy proved for the first time that jets could be operated from an aircraft carrier, by landing a specially-equipped "Vampire" on the deck of H.M.S. *"Ocean."* They decided at once to begin the changeover to jet power in all their future fighter and strike aircraft; and as the P.1040 promised to be the world's most advanced fighter they drew up Specification N7/46 to cover production of a "navalised" version of this Hawker design.

To save time, the first prototype, VP 401, was completed as a normal P.1040, without folding wings or naval equipment, and it flew for the first time on 2nd September 1947. Eleven months later a fortunate party of Press-men was privileged to watch Squadron Leader Trevor ("Wimpy") Wade put it through its paces in public for the first time at Langley aerodrome. Remembering the matchless flying of Wade's predecessor, Bill Humble, in the aggressive, piston-engined "Sea Fury," most of them wondered if they would find as much satisfaction in watching this less experienced test pilot in his sleek, beautiful jet fighter.

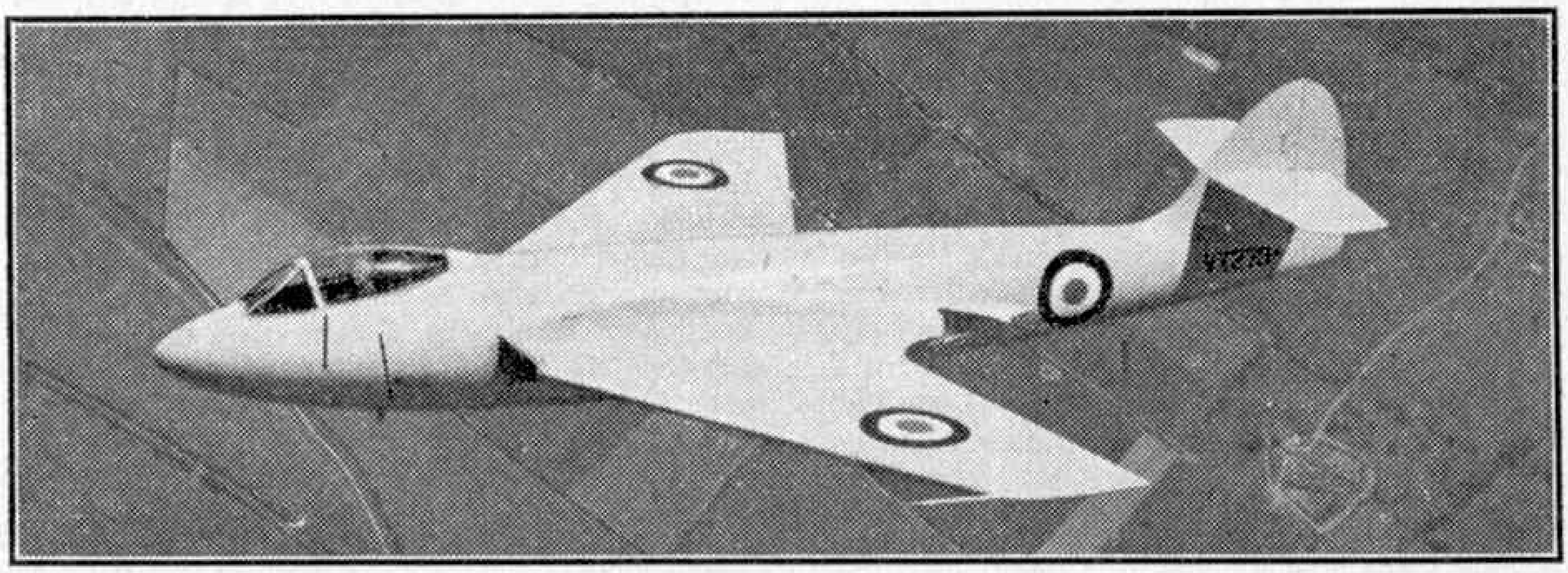
They were not left in doubt for long. Within seconds of wedging his stocky figure into the P.1040's neatly laid-out cockpit, Wade roared across the grass airfield, climbed away steeply and then returned to flash low over the hangars in a high-speed roll. It was only the prelude to a performance that excited even the most hardened reporters, and the newspapers commented justifiably next day that Sydney Camm—the man whose "Hurricanes" had saved Britain in 1940—had produced another world-beater.

The P.1040 was followed quickly by two proper N7/46 prototypes, VP 413 and VP 422, fully equipped for carrier-operation. It was in one of these that "Wimpy" Wade and his colleague Neville Duke won the S.B.A.C. Challenge Cup and the Kemsley Trophy respectively in the 1949 National Air Races at Elmdon Airport, Birmingham, at average speeds of 510 and 508 m.p.h.

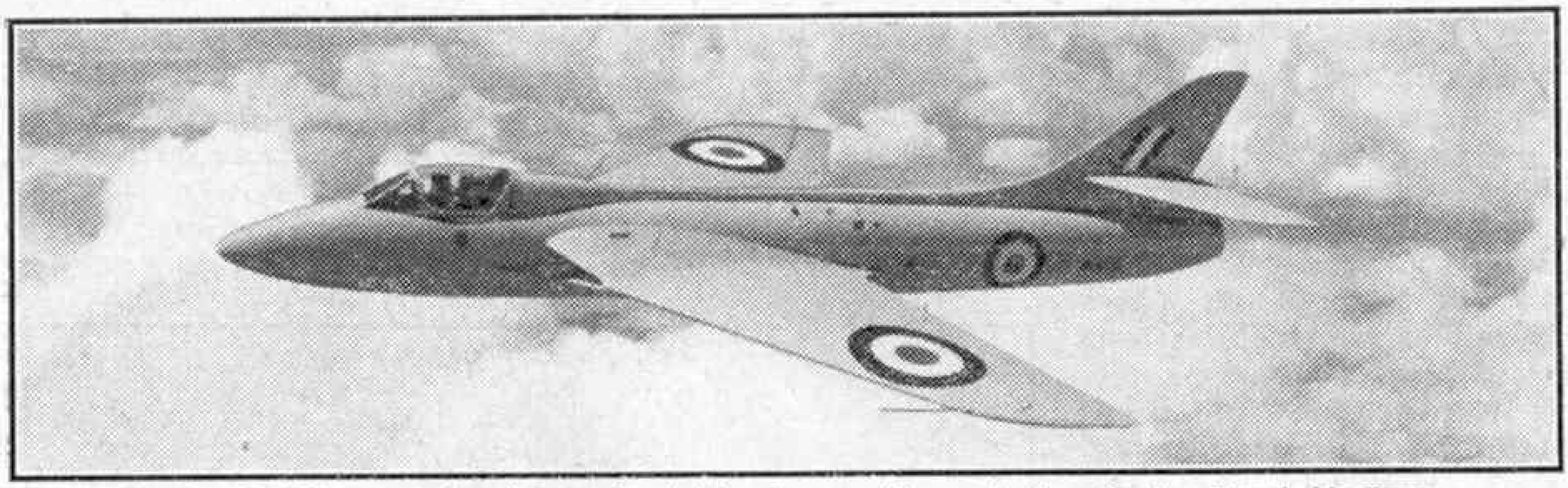
There was obviously nothing wrong with the performance of the N7/46; and deck-landing trials aboard H.M.S. "*Illustrious*" soon proved that it took off quickly enough, landed slowly enough, handled easily enough and folded down small enough for the Royal Navy. So it was ordered into quantity production as the "Sea Hawk," and Hawkers took over vast additional factories at Ham, near Richmond, and Squires Gate, Blackpool, in which to build it, side by side with "Sea Furies" and, eventually, something new and special for Fighter Command; because it was inevitable that the R.A.F. would one day equip again with Hawker fighters.

"Sea Hawk" with wings folded, on deck of aircraft carrier. The illustrations on this and the next page are reproduced by courtesy of Hawker Aircraft Ltd.

But the P.1040 and "Sea Hawk" were straight-wing aircraft, and captured German reports, backed up by our own research, had proved that sweptback wings are almost essential for aircraft flying at or near the speed of sound (660 m.p.h. at 30,000 ft.), if they are to avoid being battered to pieces by compressibility shock-waves. So the R.A.F.



A fine view of the second prototype Hawker P.1052 sweptwing fighter in the air.



Hawker P.1067 sweptwing interceptor fighter, in quantity production for the Royal Air Force.

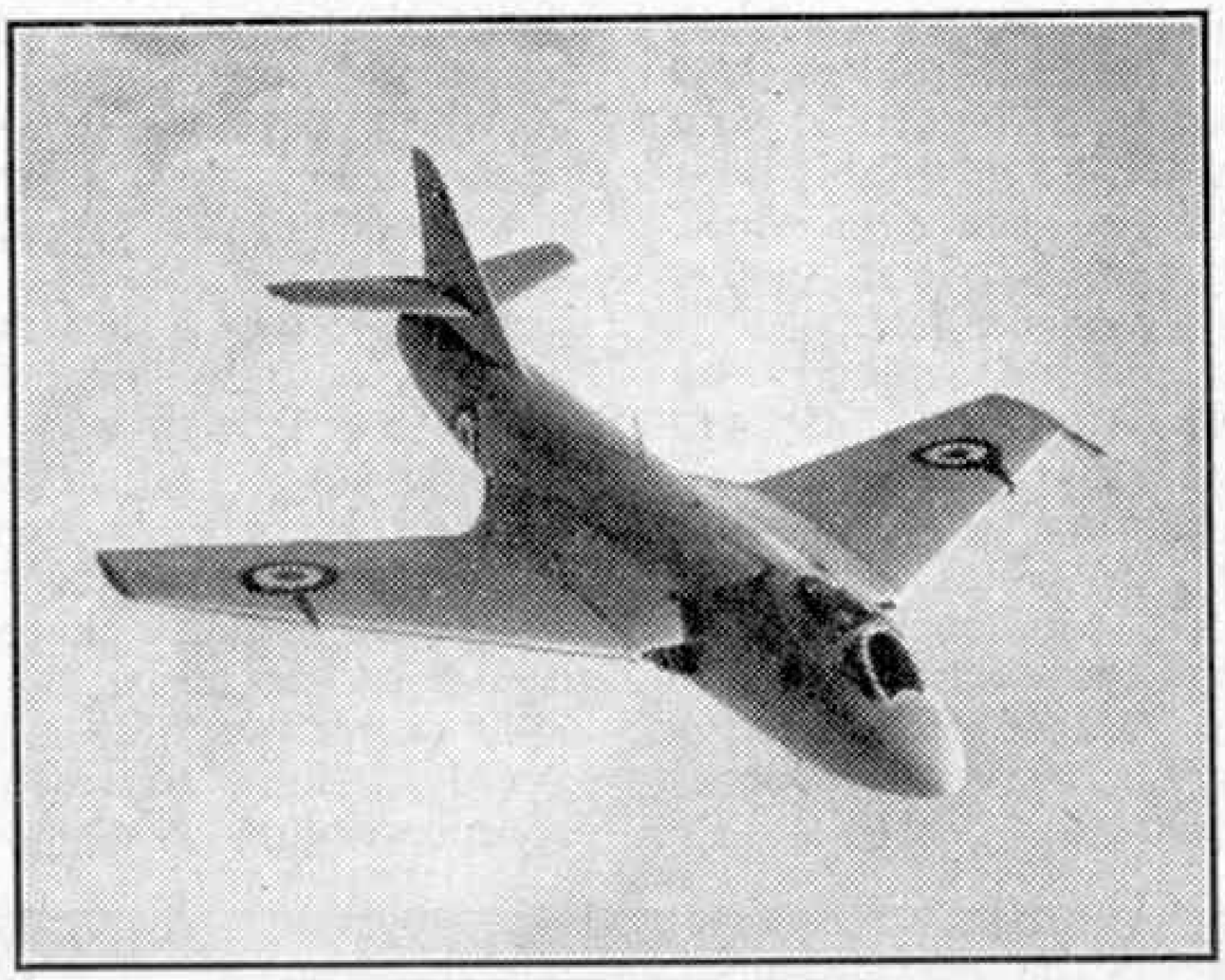
decided to wait a bit longer, until sweptwing fighters were available, before replacing its well-proven "Meteors" and "Vampires." To speed things along, the Ministry of Supply ordered an experimental sweptwing version of the P.1040 from Hawkers, and a similar sweptwing version of the Supermarine "Attacker" jet fighter, which the Navy had ordered to equip its carrier-based interceptor squadrons until the "Sea Hawks" were ready.

The result was the Hawker P.1052, probably the most beautiful aeroplane ever flown and, according to the S.B.A.C., the first British fighter able to fly faster than the speed of sound. "Wimpy" Wade proved its qualities on 13th May 1949 by flying from London Airport to Paris in 21½ min., at an average speed of 618 m.p.h.; but the P.1052 was still not quite what the Royal Air Force wanted, so Hawkers decided to carry the design a stage further by making provision for an afterburner to boost the power of the aircraft's "Nene" for take-off and in combat. This involved redesigning the rear fuselage, as an afterburner could be installed only in a straight jet tail-pipe, exhausting at the tail.

To save time, Hawkers made the new fighter—the P.1081—from VX 279, one of the two P.1052 prototypes, and took advantage of the opportunity to give it a swept tail as well as swept wings. It flew for the first time on 19th June 1950, and only five days later Wade took it to Brussels, where he gave one of his typical brilliant aerobatic displays before a spellbound Belgian crowd.

Together with the contemporary Supermarine 535, the P.1081 was the sensation of the 1950 S.B.A.C. Display at Farnborough. Then, tragically, it crashed in April 1951, and Trevor Wade was killed.

It was a heartbreaking end to such a promising fighter, but Wade did not die in vain, for Hawkers developed from the P.1081 their magnificent new "Avon"-powered P.1067, and the Air Ministry were so impressed by its possibilities that they ordered it into production several months before the prototype, WB 188, flew on 20th July 1951. It is the world's fastest fighter, and will be the mainstay of our island defences in the years to come.



The second P.1052, illustrated on the previous page, is here seen with a new tail and designated the P.1081.

The P.1067 made its first public appearance at last year's S.B.A.C. Display, and none who saw it at Farnborough are ever likely to forget it. Each day, piloted by Neville Duke, it flashed low over the long main runway faster than the World's Absolute Speed Record of 670·981 m.p.h., and then proceeded to show off its superb manœuvrability in a series of high-speed aerobatics.

At the same Display (*Continued on page 142*)

Engineering Notes

A New Generating Plant Record

Last year more electric generating plant was installed and brought into service in Great Britain than in any previous year. The new plant increased the output capacity by 1,113 megawatts, and never before in the history of the electricity supply industry of Great Britain has an additional output above 1,000 M.W. been installed within a calendar year.

The additional plant included 28 turbo-alternators, with a total installed capacity of 1,235 M.W., and 46 boilers in 25 power stations of the British Electricity Authority, 10 of which were new stations brought into service for the first time. An even higher rate of increase is planned for 1952.

The 275,000 V. Grid

Details have been given of the 275,000 V. grid now being developed in order to give satisfactory transmission between various parts of the country as the generating capacity increases. To meet requirements up to 1960 a central ring is to be provided to cover the East Midlands, the Midlands, Lancashire and the West Riding of Yorkshire. There will also be a connection to Scotland by way of Newcastle and Carlisle, and two links with an open ring round London from Tilbury to Littlebrook. In addition there will be a line down the Severn Valley that also will have a connection with London.

Two types of tower have been designed for the 275,000 V. grid scheme. One is 136 ft. 6 in. in height and the other 115 ft. 3 in. Both are larger than the towers in use on the existing 132,000 V. grid, in which the standard double circuit tower is 86 ft. 3 in. in height. High tensile steel is to be used in the new towers to keep down the total weight.

An experimental section, 40 miles in length, between Staythorpe, in the East Midlands, and Sheffield is being constructed. In this steel cored aluminium twin conductors will be used, each having a section equivalent to ·175 sq. in. of copper, but a larger conductor with a higher capacity will be used over the greater part of the new system now being developed.

Iron and Steel from Low Grade Ore

In view of the enormous steel-making capacity of the United States, it is not surprising to find that there home produced ores of good quality are becoming exhausted. So far the chief source of supply has been the Mesaba range at the head of Lake Superior, but the dwindling of supplies of ore containing a high proportion of iron has made it necessary to look for supplies overseas.

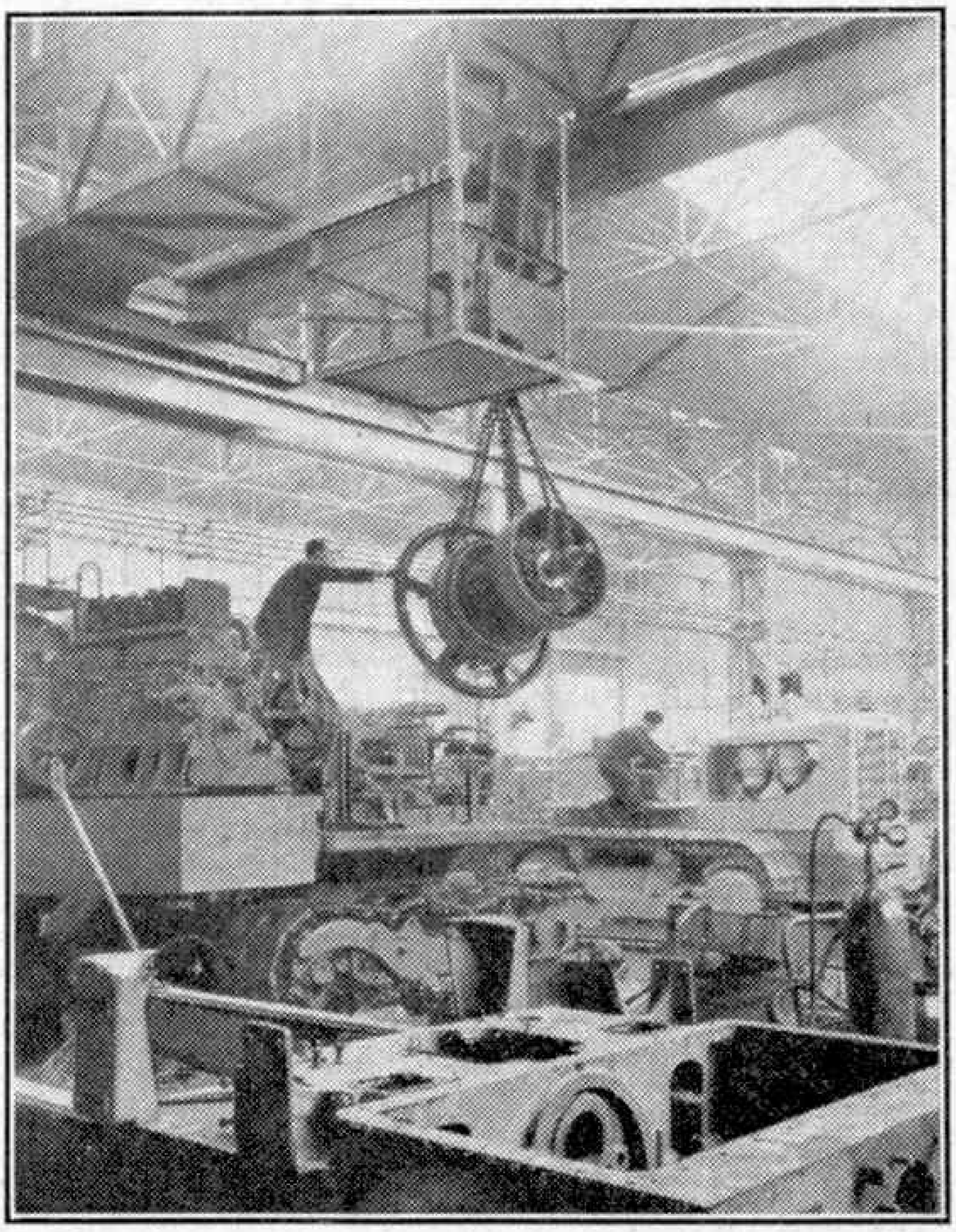
New sources are being developed in Labrador, Liberia and Venezuela, but a great part of this ore must be transported by sea, and to provide for wartime needs, when conditions may limit supplies, efforts have been made to find ways of using lower grade ore in the United States itself. There is enough of this ore there to produce a hundred times as much iron and steel as has been made already by the whole American industry. The ore is difficult to mine, however, and it contains only half the percentage of iron that the richer ore formerly used has in it.

It seems as if a solution has now been found of the problem of making use of this ore, which is magnetic. It is crushed to powder, mixed with water and circulated through an open trough under a slowly moving rubber belt. Just above this is a magnet, which attracts the ore and retains it on the underside of the belt until it is carried outside the range of the magnet, when it drops off and is collected. The concentrated magnetic ore is then ground into a thick black mud that is rolled into balls in large rotating cylinders, and these are roasted to form hard pellets that are suitable for use in blast furnaces. The pellets contain a higher proportion of iron than high grade ore.

Gear Boxes for Canadian Railcars

An order for 416 railcar gear-boxes, part of an $8,000,000 contract for 104 high speed subway cars placed with British firms by the Toronto Transport Commission, has been received by David Brown and Sons (Huddersfield) Ltd.

The David Brown gear-boxes, four of which will be incorporated in each railcar, will be similar to, though larger than, the units that the company has supplied in recent years to a number of public transport undertakings in Western Europe and Scandinavia. This Canadian order is one of the largest of its type ever received by the Huddersfield firm.



Assembling an excavator after complete overhaul in the Elstree Plant Repair Shops of John Laing and Son. The overhead crane is lowering one of the two-drum shafts that operate the ropes of the excavator. An article dealing with the large scale building operations of John Laing and Son will appear in an early issue of the "M.M."

Ship Pilots

Safe Guides in Narrow Waters

By Ronald Creasey

PILOTS are stationed at most of the world's seaports to conduct ships in and out. They usually are captains who have given up going to sea and who have become specialists in guiding and manœuvring ships in their own localities only. In a few cases, in the Mersey and the Tyne, for instance, pilots are trained through apprenticeships, but these are exceptions to the general rule.

If you fly over a harbour on a sunny day, when the water is glassy calm, you will see light and dark shades beneath the surface of the water indicating varying depths. Some are well defined, indicating that changes in depth are sudden; others show gradual changes, indicating shoaling. One of the main parts of a pilot's duties is to know of these depths, so that he can confidently take ships of varying draughts through the sometimes oddly shaped channels in safety.

Another important part of his job is to know how to manœuvre ships of all sizes without grounding them. This is often accomplished with bare room to turn and the pilot must be able to tell, from his position on the bridge, just how much clear room there is between each end of the ship and the hidden dangers. He knows this by using "marks," and by keeping the ship's bridge between imaginary lines extending from certain conveniently placed objects, such as neighbouring wharves, or a church spire in line with the corner of a building. Then, having safely swung the ship's head to seawards, he gives the necessary helm and engine orders to bring the ship to the ocean gateway. There he leaves the captain to take his vessel to the entrance to her next port of call, and goes ashore by boat or small steamer.

As there are so many highly important details to know in the average harbour, the job is highly specialised, especially as the modern merchant ship is an unwieldy thing when in closely confined spaces. For the captain of a ship to learn the details of all the harbours in the world he is likely to visit would be too exacting a demand, and would call for a phenomenal memory on his part.

At the head of the page is a picture of "Sir Thomas Brocklebank," one of the fine Liverpool pilot boats, reproduced by courtesy of Mersey Docks and Harbour Board. These vessels carry pilots to Port Lynas and the Mersey Bar to enable them to meet incoming ships and take them up to the Liverpool Landing Stage or the docks.

Naval ships rarely employ pilots, their bases being selected for easy access to the sea. Merchant ships have to use the higher reaches of seaports, which are often approached by difficult routes.

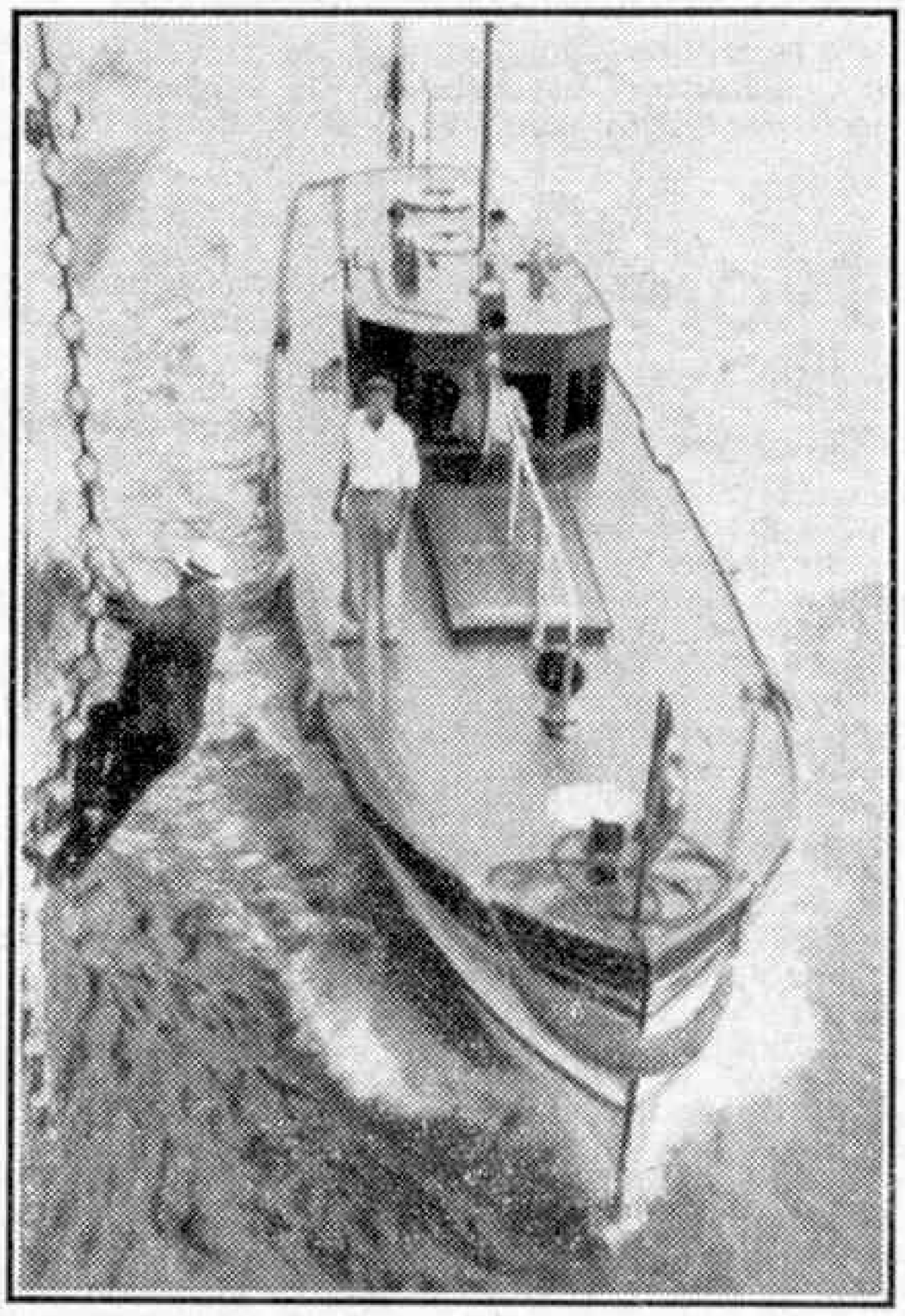
From the deck or from the shore, a ship appears to the layman to be an easy thing to handle. To experience the rare honour of being allowed to pass through pilotage waters on a ship's navigating bridge gives the task an entirely different perspective. A passenger so favoured sees the pilot take the vessel swiftly and safely past areas which, to the uninitiated, appear to be insufficiently wide for safety, and is amazed at the apparently needless precision with which the pilot slowly takes the vessel through wide areas with seemingly paradoxical care. The passenger is considering the area of the water, however. The pilot is reckoning with the depths, and is allowing for the fact that those changing shades that can be seen from an aeroplane still exist, although they are rarely visible from the lesser height of a ship's bridge.

When a ship passes by a shallow patch she is attracted to it and then suddenly repelled. This is known as "smelling the ground." The greater her speed, the stronger are these effects, and it sometimes demands the pilot's greatest skill, together with the aid of tugs, to straighten her up on her proper course after she has taken the sheer.

Handling ships is a fascinating craft. Ship designers cannot explain why no two vessels, not even sister ships, behave similarly under precisely the same conditions. Many things hinder their successful handling, such as tides and currents, and wind in particular, and these three elements never combine long to give the same resulting effect.

Ships in different trim are also affected to a greater or lesser degree by the wind. If a vessel is deeply laden most of the hull is under water and is unaffected by wind. Conversely, a ship in ballast is mainly above water and every breath of wind will affect her course, especially when she is proceeding at the slow speed necessary when approaching a berth. She would, in fact, be blown out of the channel if the pilot wasn't wary, for she is then like a balloon on the surface of the water.

A high powered ship can approach at high speed and almost stop dead when required, as with a destroyer of 40,000 h.p., but a cargo vessel designed to wander the oceans at an economical speed, which is invariably slow, has little astern power with which to bring her up. In the case of a single screw ship, going astern on the engines, due to the shape of the screw, slews the ship considerably out of alignment with the wharf she is heading for, in addition to taking a long time to get the headway off the vessel.



A Panama Canal Zone pilot leaves his ship on the completion of his duty.

This slow approach adds to the pilot's difficulties, as it gives the elements a longer period in which to affect he vessel's course. At such times tugs are a valuable aid, used in conjunction with the ship's own engines. Perhaps the best judges of a pilot's abilities are the tugmasters and the ship's own engineers, who seem to know instinctively if the pilot is using them to excess, rather than using good judgment.

Tug crews dub every pilot with a nickname according to his abilities. It behoves a beginner to exert himself to the utmost to make a good start, for his nickname, whether it be "Speed Gordon" or "Slow Sam," will stick throughout his career.

Piloting has many drawbacks, but making a slick job of berthing the world's biggest mobile units gives those in the service an exhilarating feeling of satisfaction.

The Royal Special conveying H.R.H. Princess Elizabeth and the Duke of Edinburgh to London after their Canadian tour last Autumn. The engine is No. 46126 "Royal Army Service Corps." Photograph by C. R. L. Coles.

Railway Notes

By R. A. H. Weight

Trials with Express Coal Trains

Wagons used for conveying mineral traffic in Britain are not usually fitted with vacuum or continuous brakes that can be controlled by driver or guard, although such has been the practice in a good many countries overseas for a number of years. As a trial, British Railways have equipped 100 of the new standard, 16-ton coal wagons with vacuum brakes.

Following a preliminary test run on the Midland Division of the London Midland Region, when "Royal Scot" locomotives were employed, regular trials with these wagons were arranged for Sundays, commencing in January last with a loaded coal train travelling at express speed from Toton Sidings, Derbyshire, to Brent Yard, near Cricklewood, on the outskirts of London, conveying up to 1,000 tons of coal; the empty wagons were returned to Toton as a special train on the following Sunday.

These trials are the preliminary steps in an investigation into the possibility of fitting all freight vehicles with automatic brakes, and so enabling them to run at higher speeds. Fast, all-braked goods trains conveying important freight, meat, fish, and similar traffic are run on a number of our main lines, especially the former L.N.E.R.

Many More Diesel Shunting Engines

British Railways plan to add 573 diesel shunting locomotives to their motive power stocks during the next five years. It is proposed to order 432 diesel-electric 0–6–0s of 350 h.p. similar to those in use on the L.M.R. and elsewhere and 141 diesel-mechanical engines of 150–200 h.p., some having the 0–4–0 wheel arrangement, the larger ones the 0–6–0. Main frames, wheels, structural and mechanical parts will be built in British Railways' workshops, but the diesel engines as well as the electrical transmission equipment will be purchased from contractors who specialise in their designs.

The 1953 locomotive renewal programme will include 57 diesel-electric and 12 diesel-mechanical engines. These will largely replace steam locomotives soon due for withdrawal owing to age.

The advantage of diesel operation is most marked where employment is continuous, as engines so powered have no need to visit running sheds at intervals for the purpose of loading coal, having fires and tubes cleaned and so on. Trials with high-powered diesel locomotives continue on express passenger and freight duties.

London Midland News

New B.R. class "5" 4–6–0s of the larger standard mixed traffic design, built at Derby, include Nos. 73023–4, stationed at 10C, Patricroft and Nos. 73025–8 at 28A, Blackpool. No. 73022 was recently reported to be on Chester-Bangor runs along the North Wales coast line.

Patricroft shed also has received four of the smaller class "4" mixed traffic 4–6–0s built at Swindon, Nos. 75011–4, while No. 75015 is at 27C Southport.

Of the L.M.R. 2–6–0 class "4" design, Nos. 43130–1 have gone to Hull, Dairycoates, N.E. Region, and No. 43132–5 to the Scottish Region.

Nos. 46485–7 of the small class "2" 2–6–0 type built at Darlington, N.E.R. are allocated to 26A, Newton Heath, Manchester; No. 46488 to 12D, Workington; No. 46489 to 10B, Preston; 46490 to 3A, Bescot, Birmingham, No. 46491 to 12D, Workington; No. 46492 to 3D, Aston; and Nos. 46493–4 to 17B, Rowsley.

Construction continues at Crewe of the class "2" 2–6–2Ts numbered 41300 upward for the S.R.

Six more Midland Compound 4–4–0s withdrawn lately were Nos. 41009, 41015–6, 41019, 41041 and 41043.

Not long ago I travelled to Bletchley from Oxford W.R. station, as the L.M.R. one has been closed, behind 2–6–4T No. 42600, and learned that the variety of locomotives traversing that branch included ex-Great Eastern 4–4–0 "Claud Hamilton" and 0–6–0 types, W.R. "Moguls," a Midland Compound and L.M.S. 0–8–0s.

I logged an excellent run when going down from Euston to Coventry by the accelerated 2.15 p.m. non-stop express behind the ordinary "Jubilee" 3-cylinder 4–6–0 with double chimney, No. 45742 "*Connaught*" with a 10-coach, 330-ton load. There were spurts of speed wherever necessary to recover, or allow for, time lost by slowing due to track repairs, or on account of signal checks approaching Rugby, where the train had to pass cautiously through the platform line instead of along the outside through track. The arrival at Coventry was exactly to time; 94 miles in 102 min. actually, or barely 98 min. net.

Maximum speeds were 75 m.p.h. on the descents approaching Leighton Buzzard and Rugby; 72 on the level at mile-post 65 north of Blisworth; 72 on the slightly falling gradient after leaving the main line at Rugby No. 7 Box; and a sustained 70 on the level beyond Brandon to ensure a punctual arrival. The express went on to Birmingham and Wolverhampton, the engine and her crew being stationed at Bushbury, 3B.

Rebuilt "Royal Scot" 4–6–0 No. 46154 "*The Hussar*" hauled H.M. The Queen's special from Manchester to Euston on 16th November last. About the same time another engine of that type, No. 46125 "*3rd Carabinier*" of Crewe, was reported to have run on the Furness line from Carnforth as far north as Workington.

Southern Tidings

From time to time the Southern Regional Headquarters issue for exhibition to their staffs tables showing the timekeeping results over periods of four weeks. These are calculated for each locomotive shed upon the basis of miles run from that

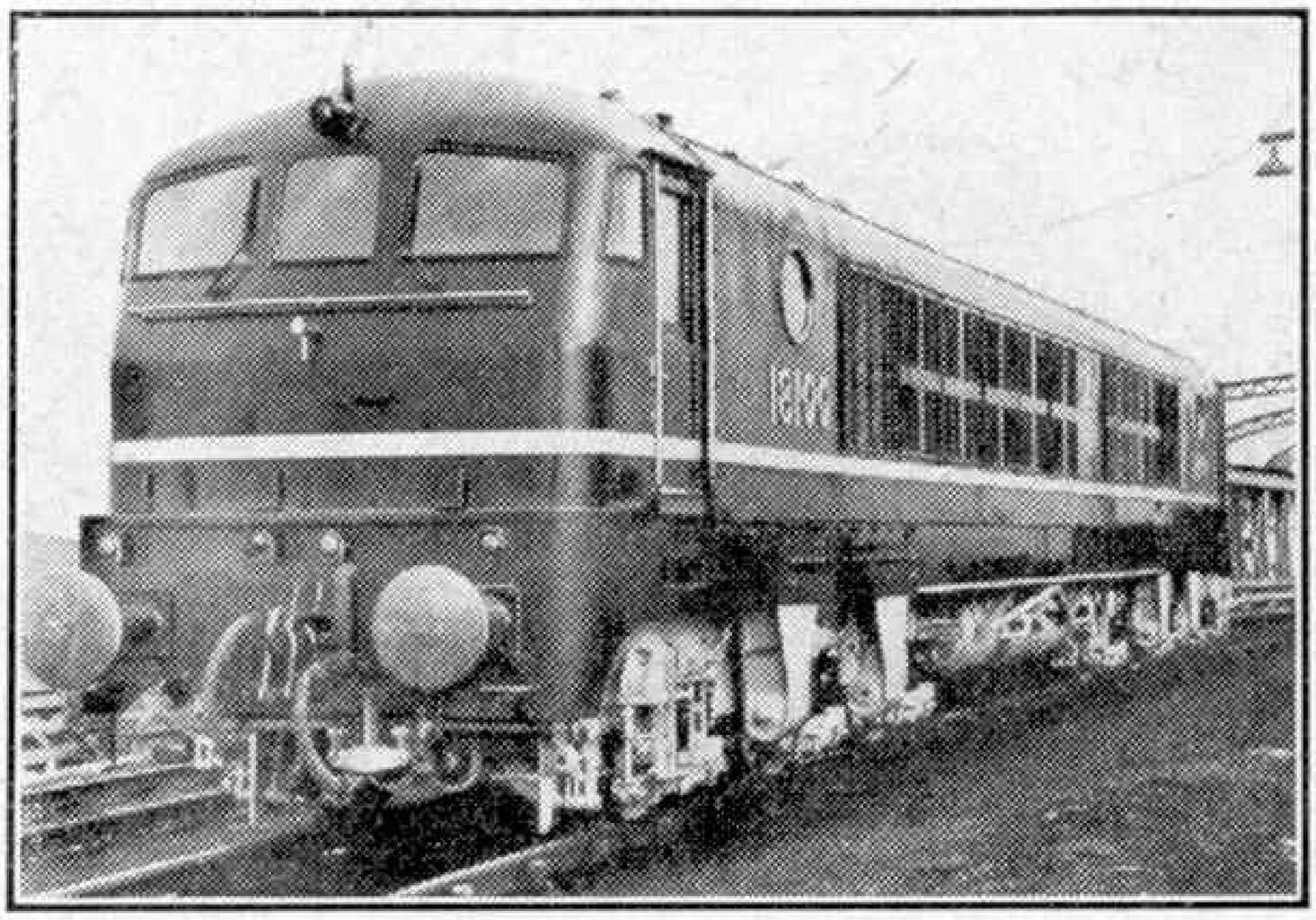
depot in relation to time lost by engines in any way, as recorded on the guards' journals compiled for every train and in the subsequent aggregate statistics. Reasonable allowance is made for delays of an exceptional nature, such as those caused by signals at danger, track repairs or overlong stops at stations.

The depots are divided into three groups. St. Leonards shed, which provides engines and men for a number of the principal direct line services to and from London, together with secondary ones to and from Tonbridge, Ashford, etc., as well as for heavy freight train workings, is included with the chief main line depots. It has headed the list with the best timekeeping record on several occasions previously, but surpassed itself last summer with the exceptionally low average for weeks on end of less than a half minute lost per 1,000 miles run. Actually this was sustained within a few decimal points for nearly three months! For an immediately previous period in early summer the figure for passenger train working was less than a minute, viz., 0.96. When one considers the steep gradients, fairly frequent stops between which timings are often brisk, and variations in the conditions of locomotives and the quality of coal, this contributes a very fine record believed to be unique in its way.

On a recent list, the Western Division sheds at Salisbury and Exmouth Junction (Exeter) obtained 2nd and 3rd places respectively; on the previous one, Eastleigh (Hants.), Exmouth Junction and Ramsgate had all lost less than 2 min. per 1,000 miles also, with higher mileages per week in several cases.

L.B.S.C. "C2x" 0–6–0 No. 32522, when working the daily goods train along the otherwise closed branch from Chichester to Midhurst, was nearing the latter town when the track collapsed and precipitated the engine into a small stream with its tender at an acute angle on the steeply sloping bank. A bridge had been rendered unsafe by heavy rain and flooding.

All "B4x" 4–4–0s have been withdrawn, having mostly been in store for some time. These were practically new engines when turned out from Brighton in 1922–4, though officially described as rebuilds of the "B4" locomotives they replaced. There are thus no ex-L.B.S.C.R. 4–4–0s remaining, though a number of much older S.E. and C. and L.S.W.R. 4–4–0s still exist; some of the former are still at work almost in original form. The last "13" 4–4–2T, No. 32091, continues to operate from Three Bridges shed at



The first British-built gas-turbine locomotive, No. 18100, recently completed by the Metropolitan-Vickers Electrical Company Limited for B.R. Western Region. British Railways (W.R.) Official Photograph.

at the time of writing.

Class "2" 2–6–2Ts Nos. 41290–7 are allocated to 73A, Stewarts Lane; Nos. 41298–41303 to 73B, Bricklayers' Arms. The others of the class up to 41319 as ready are to be shedded in small consecutive groups at Three Bridges, Faversham, Brighton and Eastbourne. Unusual engines noted on through return workings with corridor cross-country trains from Brighton have included Wainwright "D" 4–4–0 No. 31750, to Bournemouth, and one of the standard class "4" 2–6–4Ts to Salisbury.

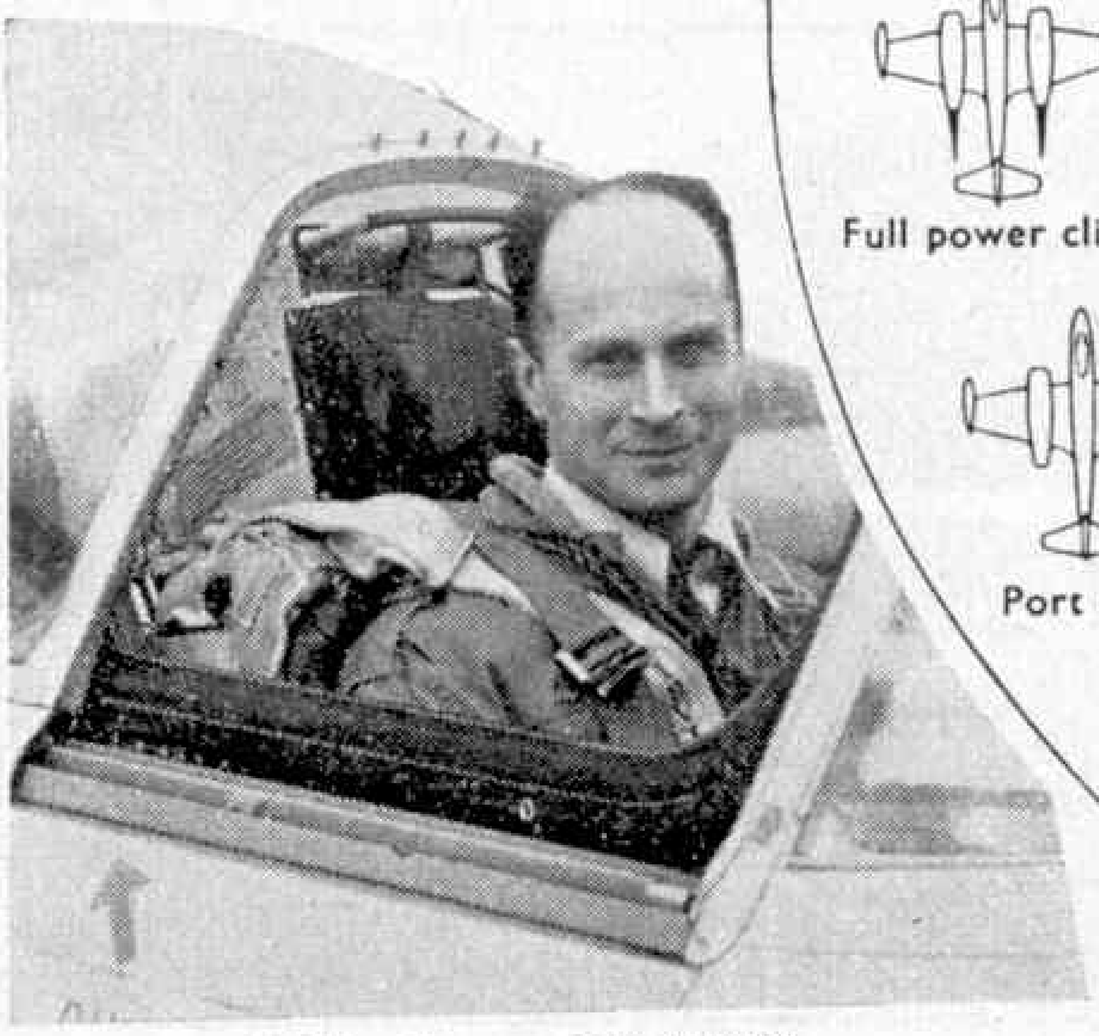
A "cowcatcher" on a B.R. locomotive? This photograph by J. N. Westwood, Mumbles, shows No. 67164, an ex-G.E. 2-4-2T, specially fitted for working the St. Combs Light Railway, in Aberdeenshire.

Western Region Locomotive Notes

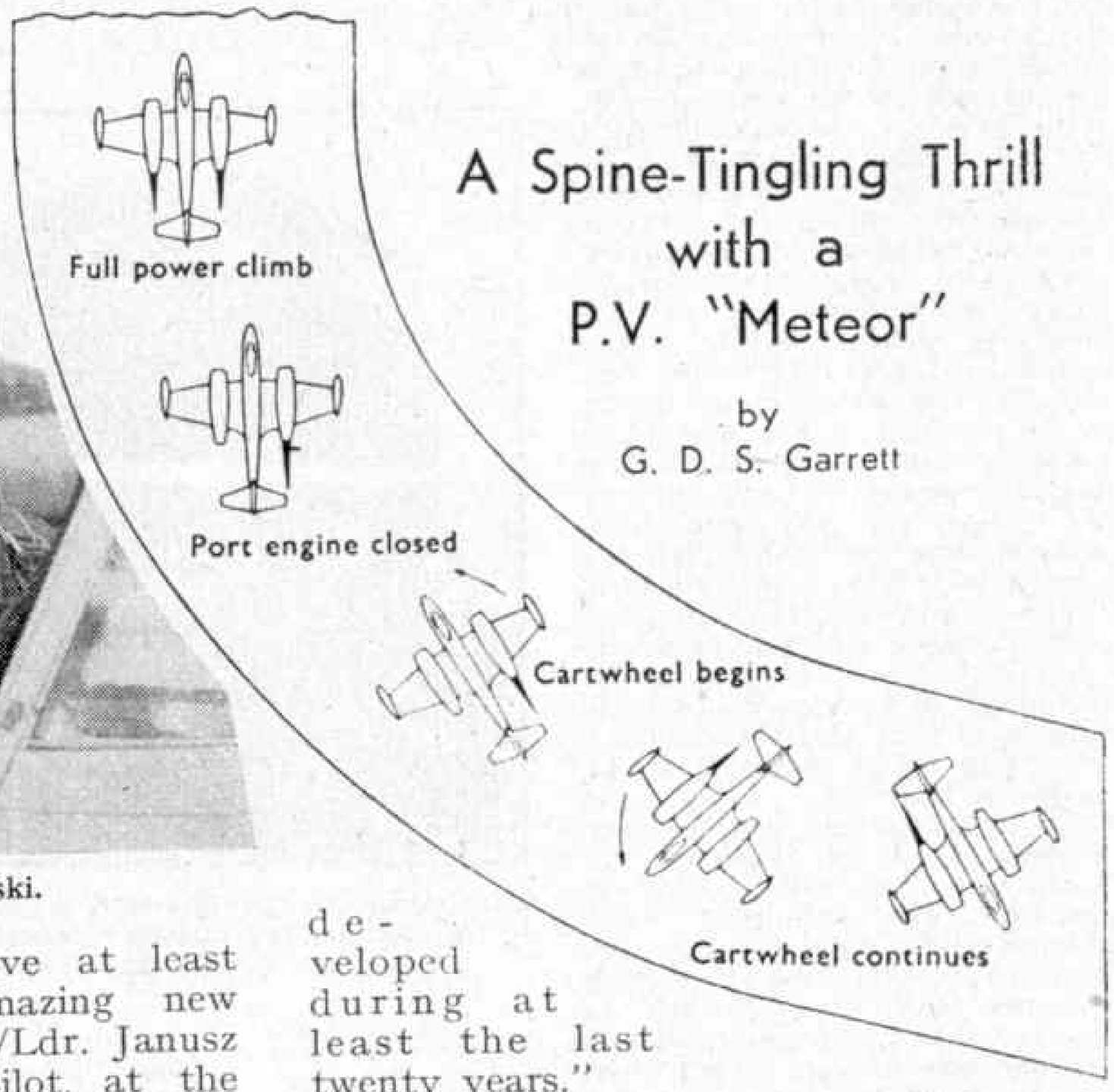
After the notes published in the January "*M.M.*" were written it was learned that during the closure of the main line between Patney and Westbury last autumn, it was only when West of England expresses were diverted via Bristol that "Kings" hauled them. Those temporarily operating by way of Melksham as well as Devizes were usually worked by "Castles."

The "Bulldog" 4–4–0 class has become extinct. The two last examples stationed at Reading of which details were given in January, have been withdrawn for scrapping. Other express locomotives have shared the same fate including the "Star" 4–6–0s Nos. 4028, 4042, "*Prince Albert*," and 4046 "*Princess Mary*," and the "Saint" 2-cyl. 2–6–0s Nos. 2944 "*Highnam Court*" and 2948 "*Stackpole Court*." The name carried by engine No. 1010 is now correctly spelt "*County of Caernarvon*" instead of "*Carnarvon*."

Zurabatic Cartwheel



S/Ldr. Janusz Zurakowski.



A Spine-Tingling Thrill with a P.V. "Meteor"

by
G. D. S. Garrett

BY now most people have at least heard about the amazing new aerobatic demonstrated by S/Ldr. Janusz Zurakowski, Gloster test pilot, at the S.B.A.C. Exhibition in October of last year. It was, said Major Oliver Stewart, Editor of "*Aeronautics*" and official commentator during the trade days of the Exhibition, "the first entirely new manœuvre to be developed during at least the last twenty years."

The P.V. "Meteor" shooting skyward.

Zura didn't really want to talk about it when I managed to catch him on the ground between test flights at Moreton Valence.

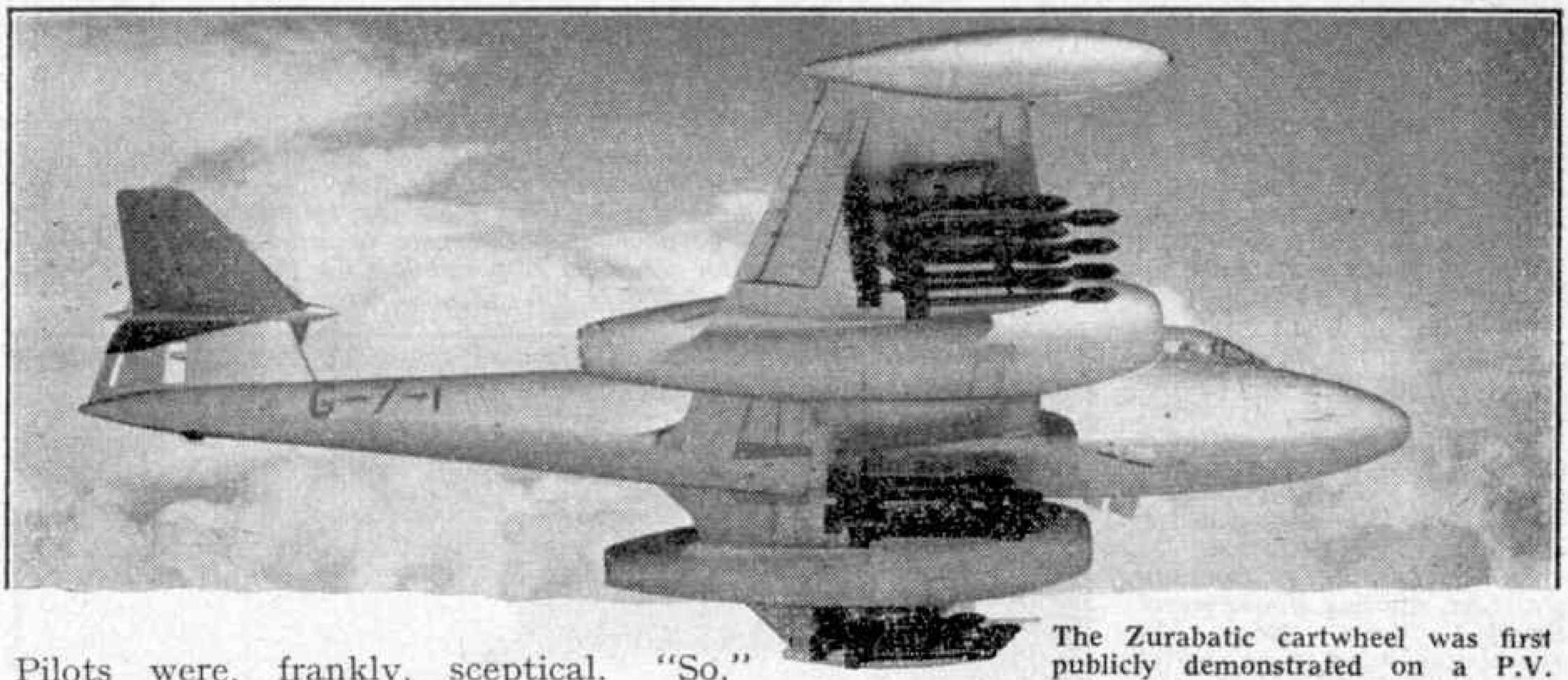
"It is nothing," he said. "It is quite easy to do. There are many things going on here today which are of much more technical interest."

But as I was sure that many people would be interested in hearing more about the background of the cartwheel, I persevered.

"When did you first do the manœuvre?" I asked.

"About a year ago," said Zurakowski. "I had been thinking about it for some time. I had worked it all out and was sure that it was theoretically possible, so, one day, I thought I would see if it was practical." He went on to say that having once proved that it could be done he was satisfied and didn't do it again.

Then, one day, officers attending the Empire Test Pilots' School visited Gloster Aircraft. In the course of conversation during a discussion on the controllability of the "Meteor" and its handling qualities, Zura happened to mention casually the now famous cartwheel. The Empire Test

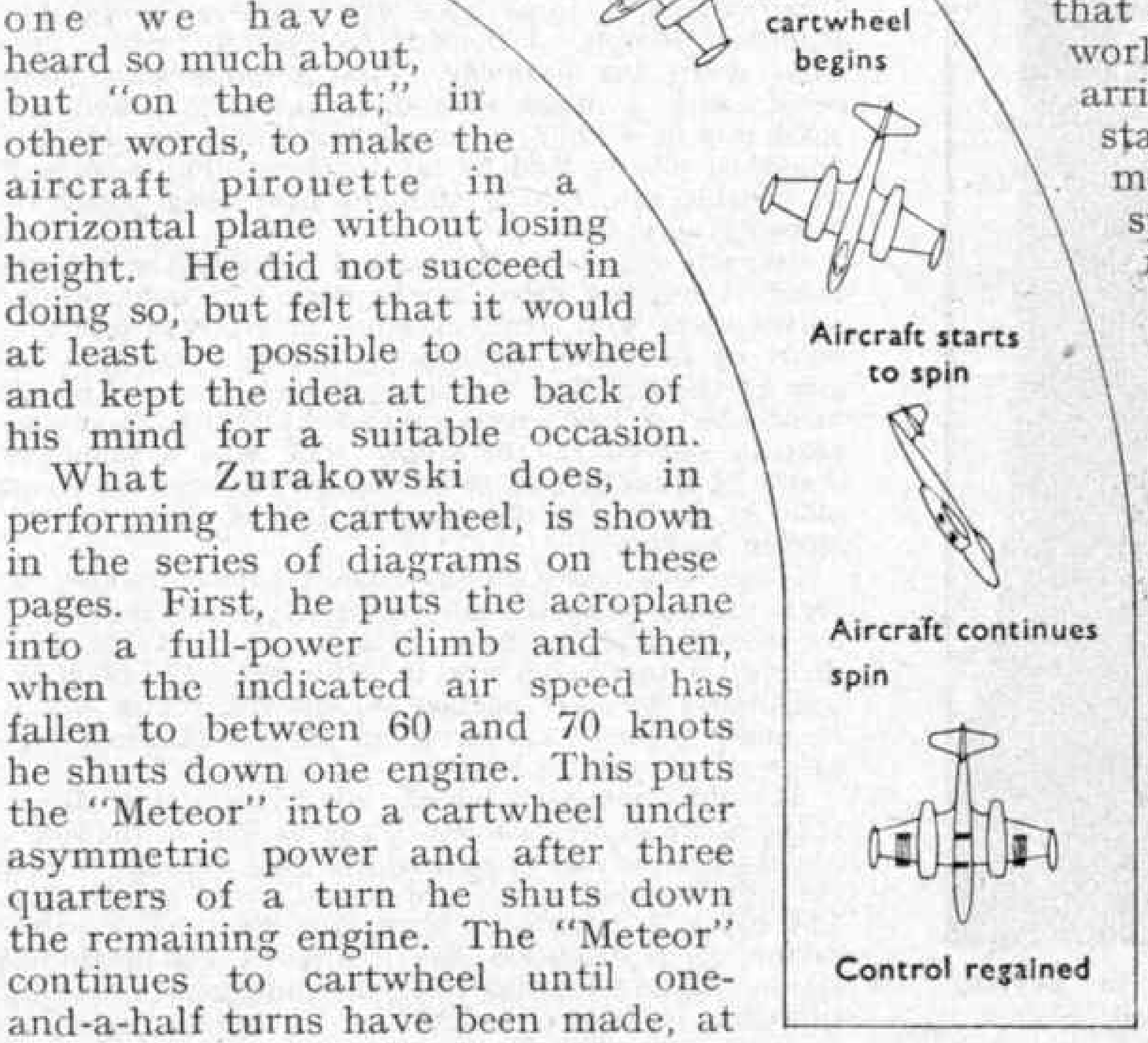


The Zurabatic cartwheel was first publicly demonstrated on a P.V. "Meteor" carrying 24 rockets and wing tip fuel tanks.

Pilots were, frankly, sceptical. "So," said Zura, "I had to do it at the Show in order to prove that it was possible."

The idea of the cartwheel evolved from another aerobatic Zurakowski tried out on a "Hornet" some five years ago, when he was asked to check the one engine cut case, but to wait three seconds before taking recovery action. On that occasion he attempted to perform a similar evolution to the one we have heard so much about, but "on the flat;" in other words, to make the aircraft pirouette in a horizontal plane without losing height. He did not succeed in doing so, but felt that it would at least be possible to cartwheel and kept the idea at the back of his mind for a suitable occasion.

What Zurakowski does, in performing the cartwheel, is shown in the series of diagrams on these pages. First, he puts the aeroplane into a full-power climb and then, when the indicated air speed has fallen to between 60 and 70 knots he shuts down one engine. This puts the "Meteor" into a cartwheel under asymmetric power and after three quarters of a turn he shuts down the remaining engine. The "Meteor" continues to cartwheel until one-and-a-half turns have been made, at which point it is nose down. Then the aeroplane begins to spin and the normal recovery action is started, so that after about a quarter to half a turn it is completely under control.



With the P.V. "Meteor," carrying 24 rockets, the spin is not controlled until a speed of about 100 knots is obtained, but without rockets control is at about 90 knots (165 km./hr.). For the evolution about 3,000 to 4,000 ft. of altitude are required, most of this being needed for the partial spin and recovery.

To the question of how the controls are handled during the course of the manœuvre Zurakowski replied that it is not necessary to do much work with them until the spin arrives. "Once the aeroplane has started to turn there is no means of stopping it until enough speed has been gained for the rudder to take effect."

He agreed, nevertheless, that the cartwheel is difficult to perform perfectly. The big point is that at the beginning it is essential to get the aeroplane absolutely vertical, since it will slip out if there is the slightest deviation from this position and will then go into an inverted spin or some similar manœuvre.

Zurakowski emphasised that the engines are closed down, but not cut completely.

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From Our Readers

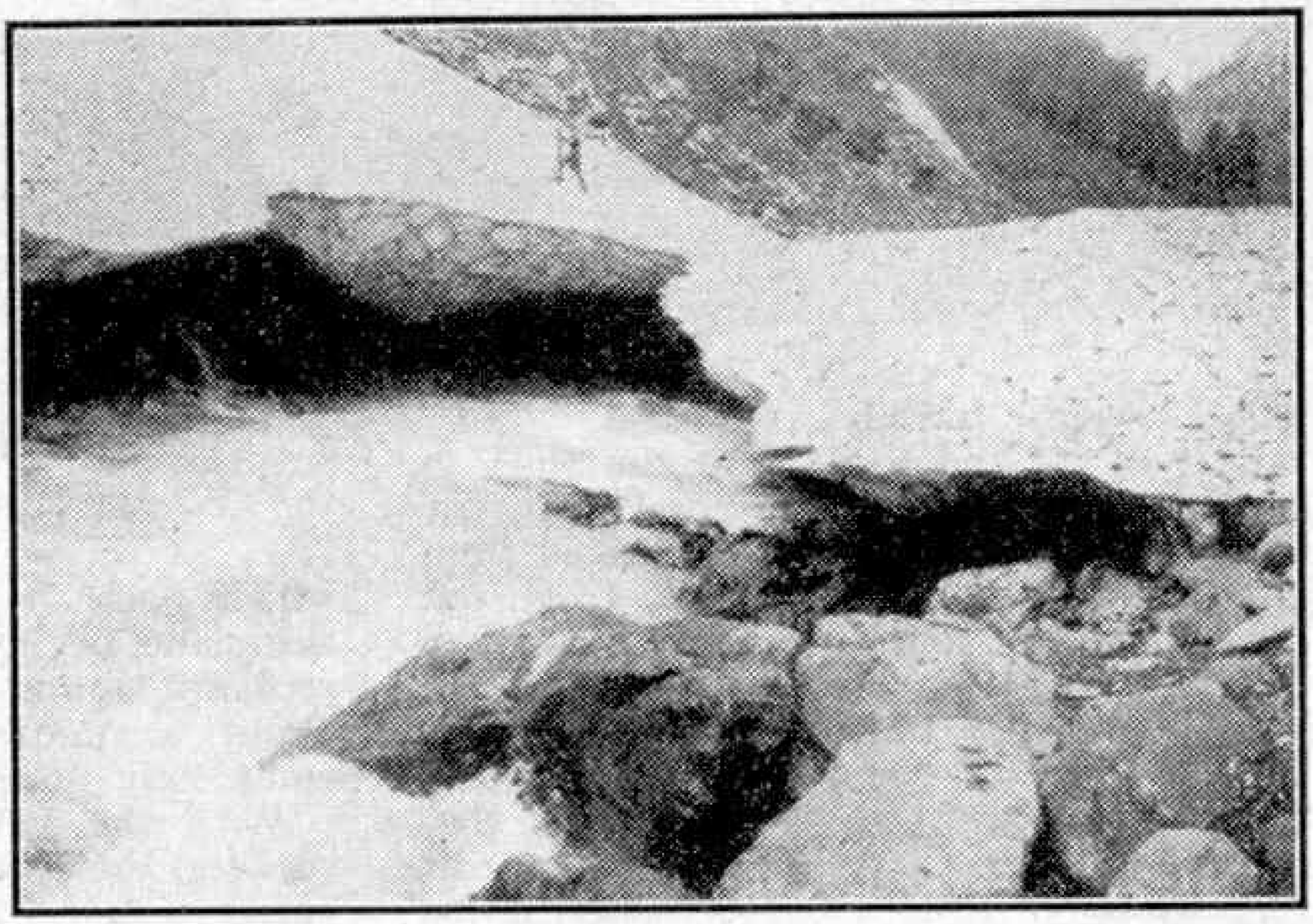
This page is reserved for articles rom our readers. Contributions not exceeding 500 words in length are invited on any subject of which the writer has special knowledge or experience. These should be written neatly on one side of the paper only, and should be accompanied if possible by original photographs for use as illustrations. Articles published will be paid for. Statements in articles submitted are accepted as being sent in good faith, but the Editor takes no responsibility for their accuracy.

A BRIDGE OF ICE

While trekking in the Liddar valley in Kashmir, we found the remains of an enormous "bridge" of ice and frozen snow at a lonely place called Tanin. These are shown in the accompanying illustration.

In the Spring and Summer the river, winding among rocky boulders down from the Himalayas, flows quite swiftly through the fertile countryside; but in Winter it becomes frozen solid in this district. The native mail carriers, travelling on foot, then use it to guide them up the snow-covered valley, where the peasants "hibernate" for weeks on end in their primitive wooden huts, almost entirely cut off from other parts of the valley.

When the snow begins to melt in the Spring, the river becomes very active again and gradually breaks down the thick ice underneath, thus forming these stout bridges.



An ice bridge over a Kashmir river. Photograph by V. Hallam, Fleet.

At all times of the year the water, coming down from the snow-capped mountains above, is icy cold, and it is painful to dip even one's fingers in it for more than a second or so. V. HALLAM (Fleet).

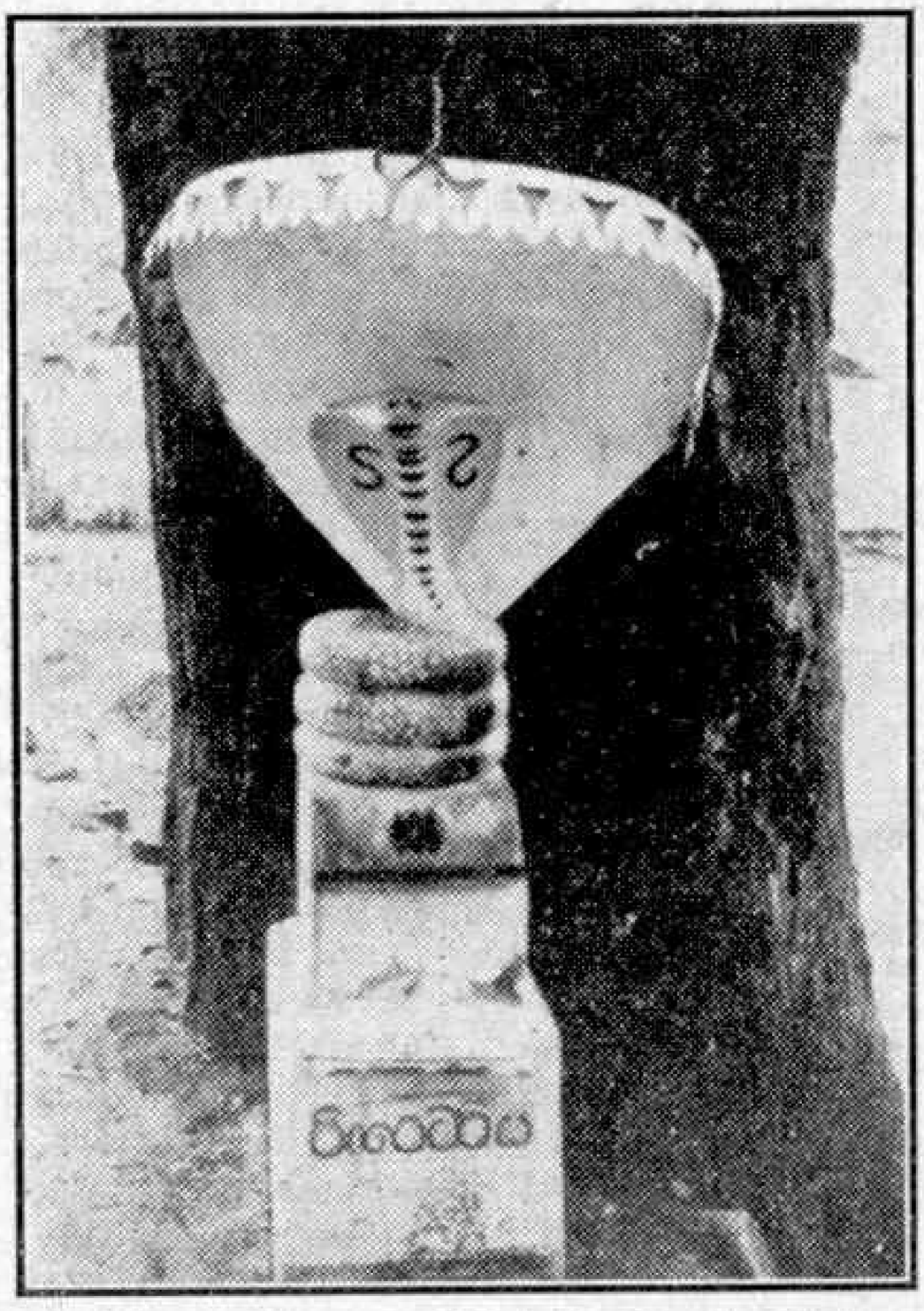
A REMARKABLE ALMS BOX

One afternoon, when going along a mountain road near Bandarawela in the mountainous province of Uva, Ceylon, I came upon the entrance to a large Buddhist temple. I decided to explore further and went down the pathway. First I came to a large room, with a stone verandah, in which about six small groups of children were being taught by Chikkus, Buddhist priests, and by lay teachers. The noise was so considerable that I thought that they could be learning very little.

Carrying on down the path I reached the temple itself. I left my shoes at the door and went inside, where there were many statues of Buddha and the scent of beautiful frangipani flowers. On the far side of the building was a small rock plateau, which overlooked a lush river valley. At the back of the plateau carved in the living rock was a standing statue of Buddha said to be about two thousand years old. As far as I could estimate it was about twenty feet in height.

When I returned to the road I saw a number of carts coming down the hill. Each stopped as it reached the temple and its driver went to an alms box and dropped a small coin into it. This offering was made apparently for safe passage on the hill roads, which in many places have drops of several hundred feet below their unfenced edges.

The alms box itself I found most interesting. On it is the figure of a cobra, which can be seen in the lower illustration on this page, and the slits through which the offerings are made are immediately below this. The cobra is thought by many Buddhists to be semi-divine, since tradition has it that it had sheltered the meditating Buddha from the rain, presumably by spreading its hood over him. L. ALLEN (Ewell).



Alms box at a Buddhist temple in Ceylon. Photograph by L. Allen, Ewell.

Photography

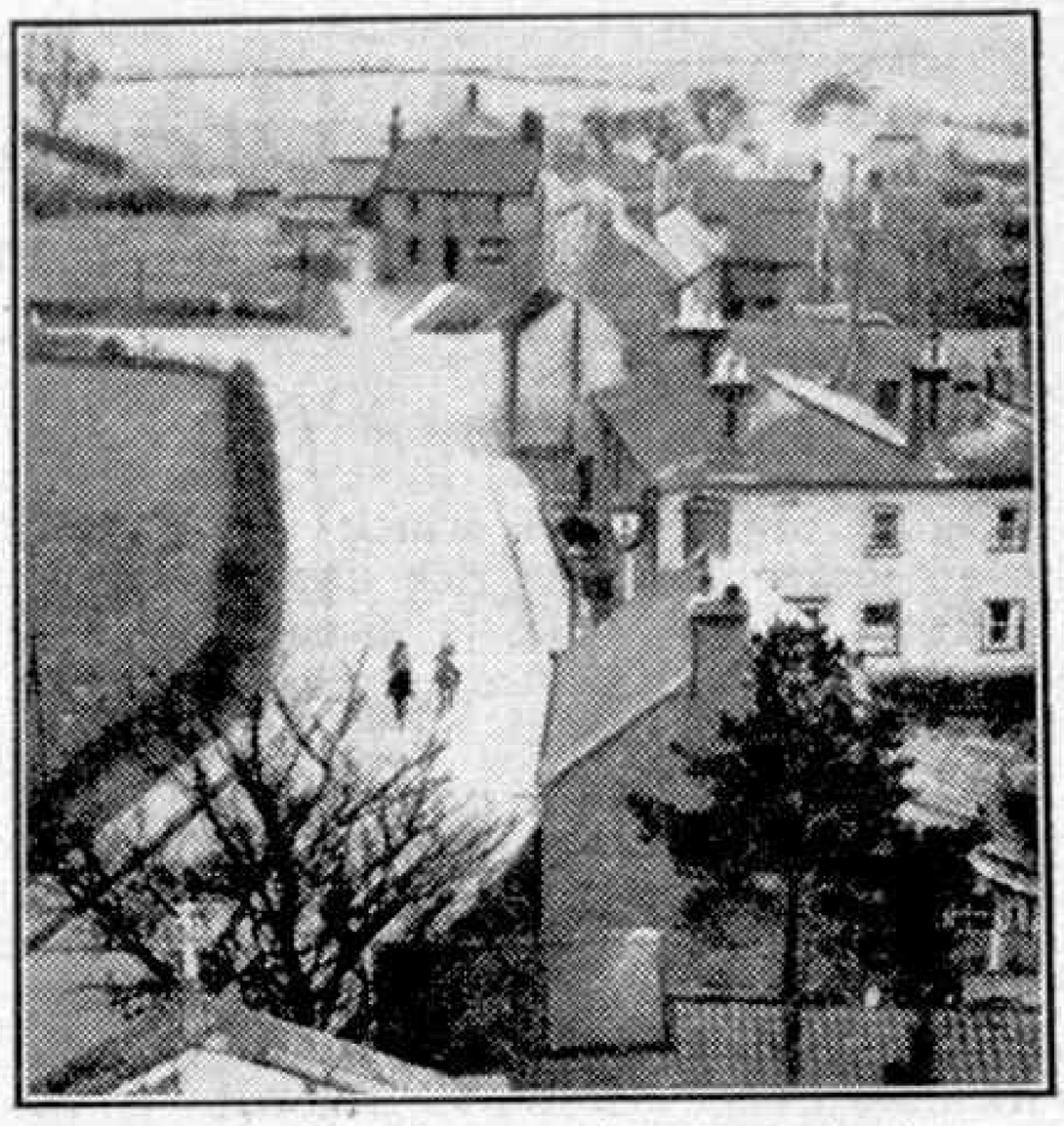
From the Church Tower

By E. E. Steele

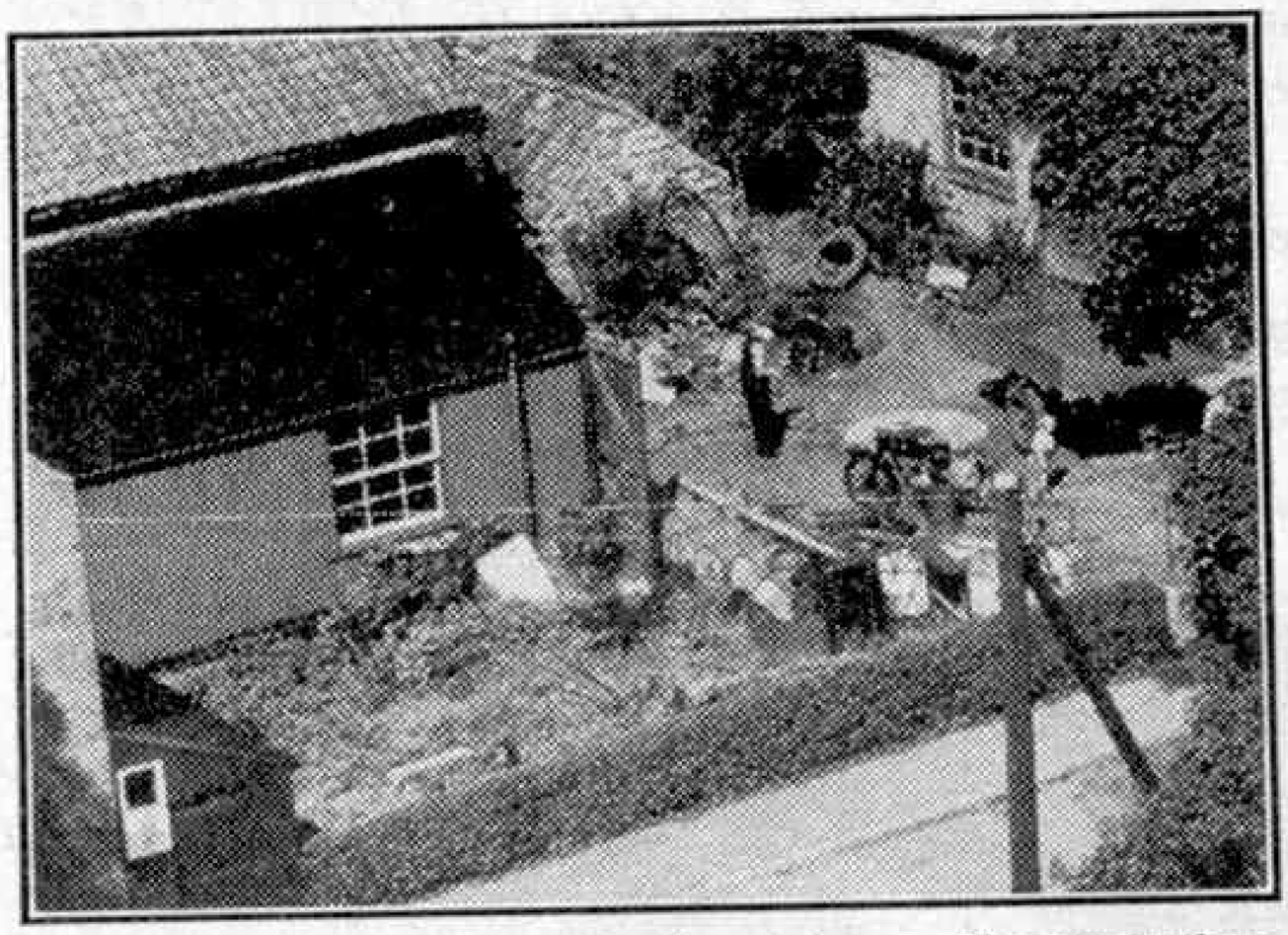
A HIGH viewpoint provides an interesting change from the more usual eye-level snaps that form the bulk of one's photographs. For instance, the view from a Church tower gives a totally different impression of familiar surroundings, however dull they may have appeared to be from the ground. During a recent holiday I spent a most enjoyable morning on the tower of our old village Church, taking photographs and observing the dwarfed figures pursuing their normal activities about the streets and fields, and I consider it was time well spent if only for the fun of it.

It should be stressed, of course, that no attempt should be made to ascend a Church tower without first obtaining permission from Vicar or Warden, which I think will usually be given when one's request is clearly made, and there is a promise that no risks or stunts will be undertaken. There is sufficient space to walk all round the tower, but there should be no treading on leads, or getting off the path. The camera may be held in the hand with the elbows supported by the masonry, but mind there are no loose gadgets such as filters to fall. I inadvertently allowed my lens-hood to be dislodged, but fortunately it fell into a dense bush in the Churchyard and survived! It is therefore well to have the camera supported round the neck by a strap, so that it cannot be dropped.

If detail in the distance is required, then obviously one must choose a clear day, but filters have a certain haze-cutting effect, and may be used to advantage. Winding stretches of road look well from the air, especially tree-lined country lanes, and figures or vehicles may be included with very little waiting. My own village is not particularly attractive, but I can well imagine some village, with a nice green, surrounded by thatched cottages, that would be most charming when photographed from the air.



Looking down on the village street.

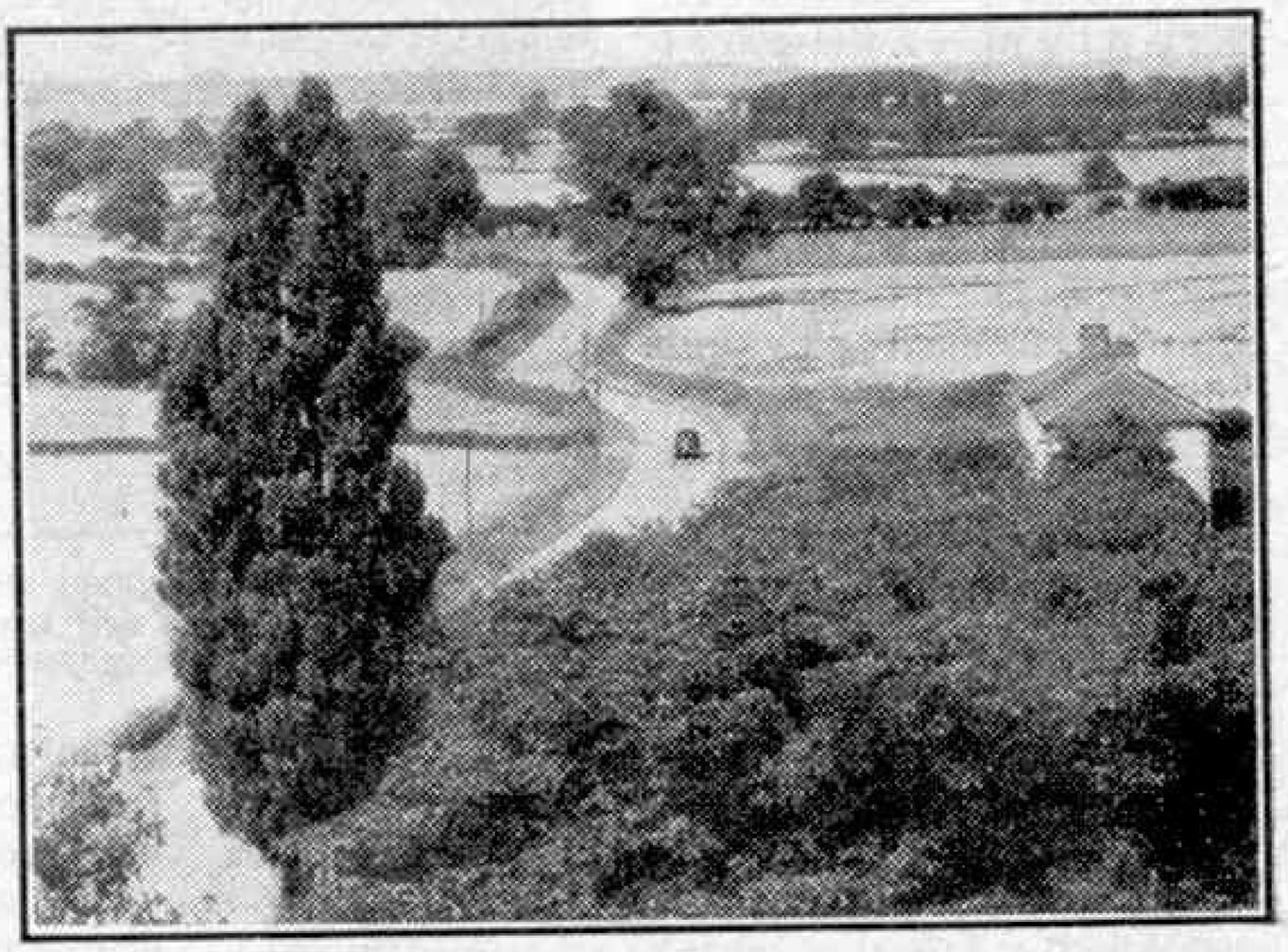


The blacksmith's shop from the Church tower. The illustrations to this article are by the author.

Provided that the camera lens can be stopped well down, it may be possible to include a pinnacle of the tower in the photograph, thus revealing the viewpoint from which the photograph was taken. In the same way a distant scene can be shown through a gap in the masonry, the latter forming a frame for the picture, but the effect will be spoilt if the stone foreground is out of focus.

By choosing one's time it would be easy to obtain pictures of various activities such as processions, garden fêtes, and cricket matches, the latter probably making an unusual picture, as the whole team would be well displayed.

As the ascent to the tower is usually made by a narrow, and often dusty, stone staircase, it is best to wear old clothes and shoes, and to have the camera in a case. When descending from bright sunlight take care until your eyes become accustomed to the gloom of the spiral staircase, which may appear quite dark in places.



View of the countryside from the Church tower.

A Uranium Air Lift

Ore Transport in Sub-Arctic Canada

By V. Burton

IT has been announced in Ottawa that Canadian geologists have discovered a field of uranium ore which "may prove even larger than the rich deposits of the Belgian Congo." It is situated in the north of the province of Saskatchewan, and the discovery is important for two reasons.

The first of these reasons is that the Eldorado Mine at Port Radium, so named because radium is mined there, on the rugged ice-girt shores of Great Bear Lake in the sub-Arctic region of Canada, is not inexhaustible. Secondly, Eldorado is the better part of 1,000 miles from the nearest rail head at Waterways, in Alberta, and bringing the ore out is, to say the least, something of a problem.

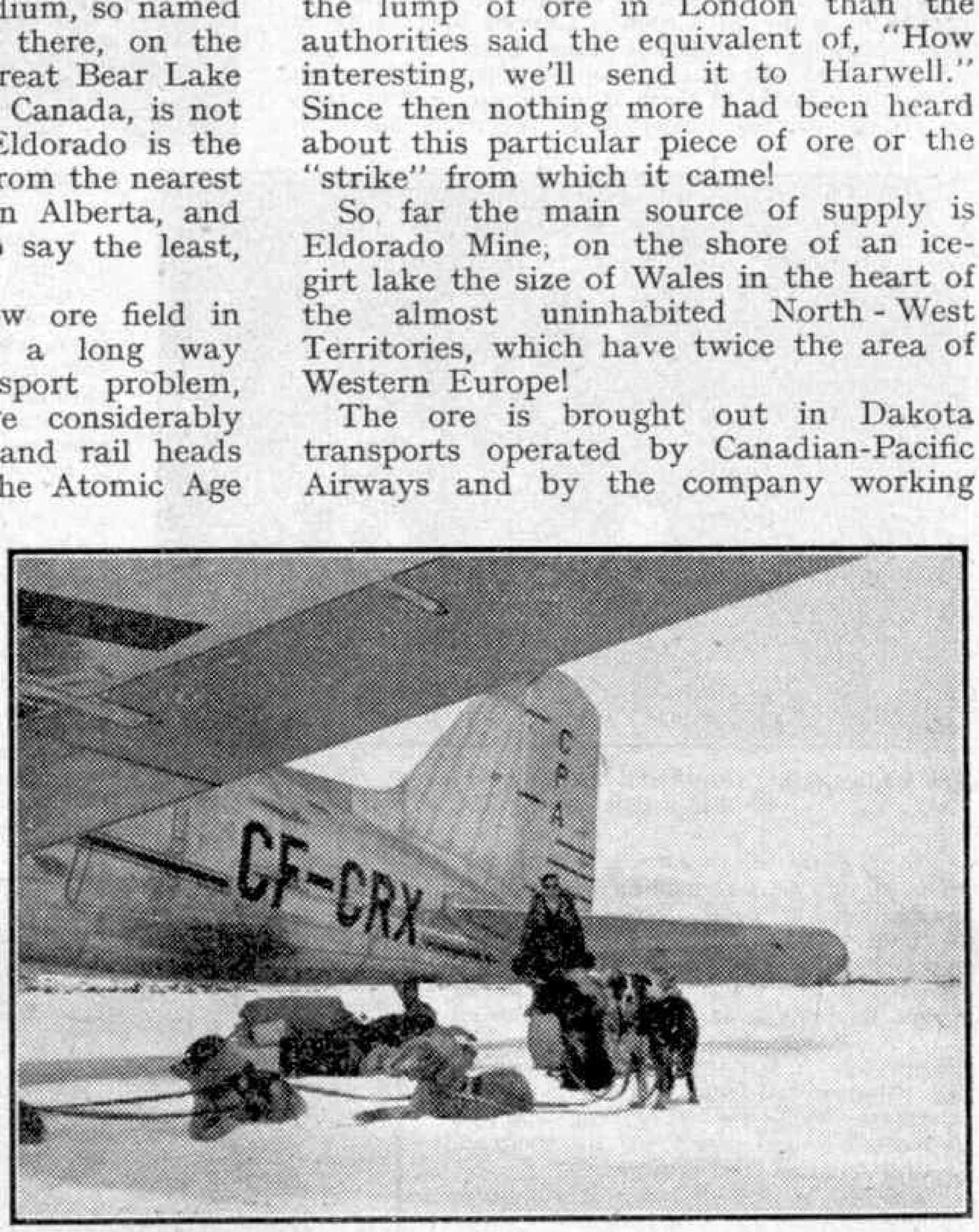
Development of the new ore field in Saskatchewan would go a long way towards solving the transport problem, for the new deposits are considerably nearer the existing road and rail heads from which this stuff of the Atomic Age could be delivered to the refinery at Port Hope, on Lake Ontario. Meanwhile, air freighters will continue to shuttle back and forth between the airfield at Edmonton and the airstrip hard by Eldorado, laden with 100 lb. sacks of ore.

Mention the word uranium at Port Radium, Edmonton or Waterways, and you earn quizzical glances. It is the same in Ottawa. In fact, in Canada it is almost impossible to find out anything about the mining of pitchblende, from which uranium is derived. Government authorities in Ottawa give every possible encouragement in the search for pitchblende, but once a new deposit is discovered, its location and extent become a top secret.

For example, three years ago a Canadian prospector found a deposit of uranium ore in a locality which shall remain nameless, and gave a sample of the ore to the authorities in Ottawa for assaying. It was the last he heard of his strike—or his ore. But he had kept one knob of the black, lead-heavy material, with its dull sheen, and when his wife left for a holiday in Britain he asked her to have it assayed in London. But this subterfuge did not get him anywhere. No sooner did she produce the lump of ore in London than the authorities said the equivalent of, "How interesting, we'll send it to Harwell." Since then nothing more had been heard about this particular piece of ore or the "strike" from which it came!

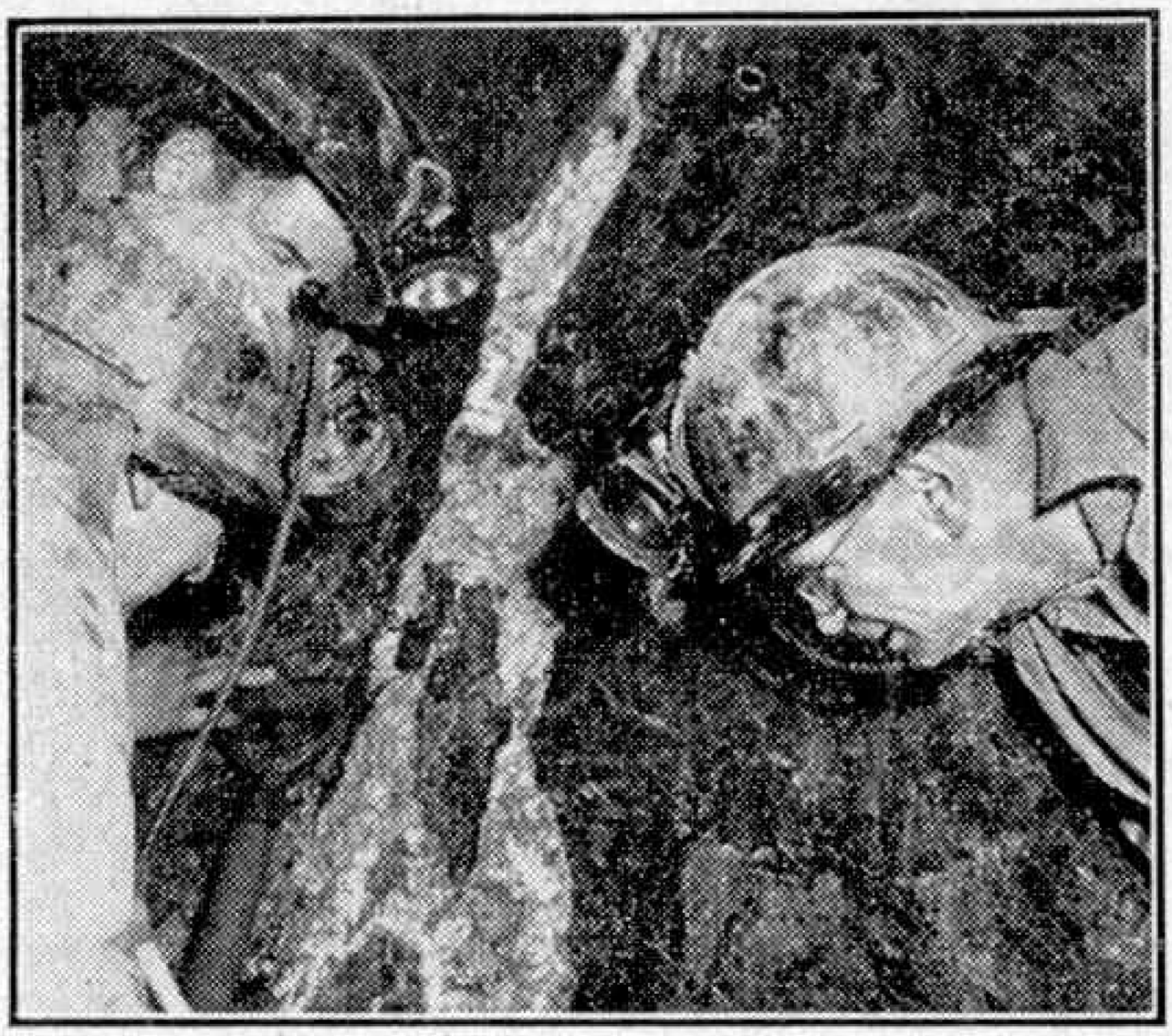
So far the main source of supply is Eldorado Mine, on the shore of an ice-girt lake the size of Wales in the heart of the almost uninhabited North-West Territories, which have twice the area of Western Europe!

The ore is brought out in Dakota transports operated by Canadian-Pacific Airways and by the company working Eldorado Mine; and the Uranium Airlift has recently been reinforced with one of the giant United States Fairchild "Airpackets" with a 10-ton load-carrying capacity. Transport however depends mainly upon the barge trains moving



A Canadian Pacific Airways aircraft on the Eldorado Mine run, in the far north of Canada. The dog team alongside illustrates the contrast between old and new means of transport in sub-Arctic regions.

between the shores of Great Bear Lake and the rail head town of Waterways. In winter the temperature hovers around the 60 below zero mark, or 92 deg. F. But mining continues throughout the cold months, under the hard glare of arc lamps and the soft glow of the Northern Lights, the black ore piling up on the dockside near the mine ready for loading when the first barges arrive in July or early August. By October the rivers are once again jammed with ice, and from then until the following July air freighters offer the only means of bringing out the all-important ore.



Inspecting a view of uranium ore in the Eldorado Mine, on the shore of Great Bear Lake, in Canada's North West Territories.

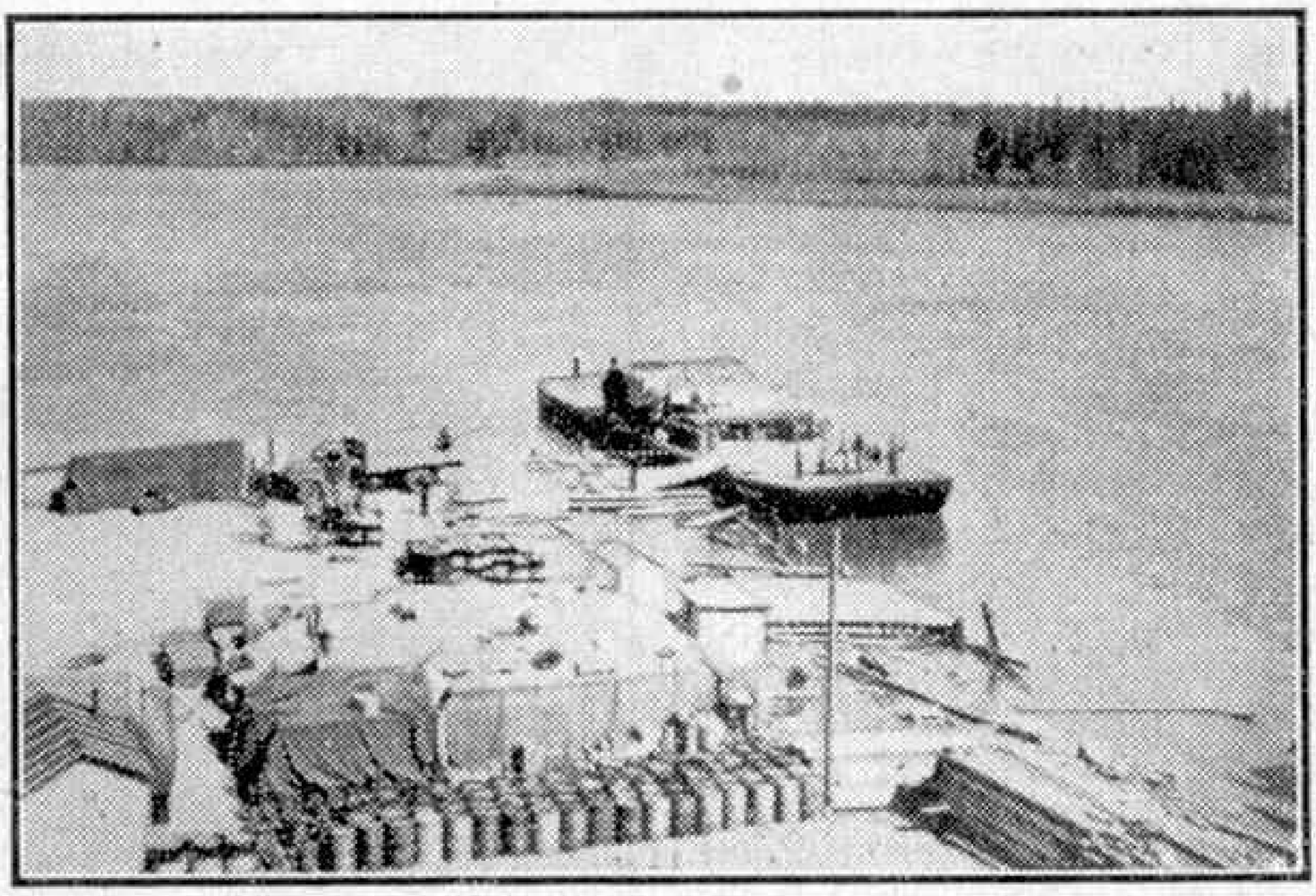
"It's loaded in 100 lb. sacks," I was told when I was at Edmonton. "The 250 miners at Eldorado are short of meat—the weather has been too bad for flying—and we're sending in 500 lb. of beef to-morrow. If you like you can fly in sitting on a side of beef and fly out sitting on a sack of uranium. Or you can wait a month and go in by barge."

When in July the ice shows sign of breaking no time is lost in hurrying it on its way out. Mr. Frank Broderick, Manager of the Northern Transportation Company, owners of the barges operating along the tortuous rivers between Waterways and Great Bear Lake, told me: "Sometimes we get the ice moving a week ahead of time by dynamiting it."

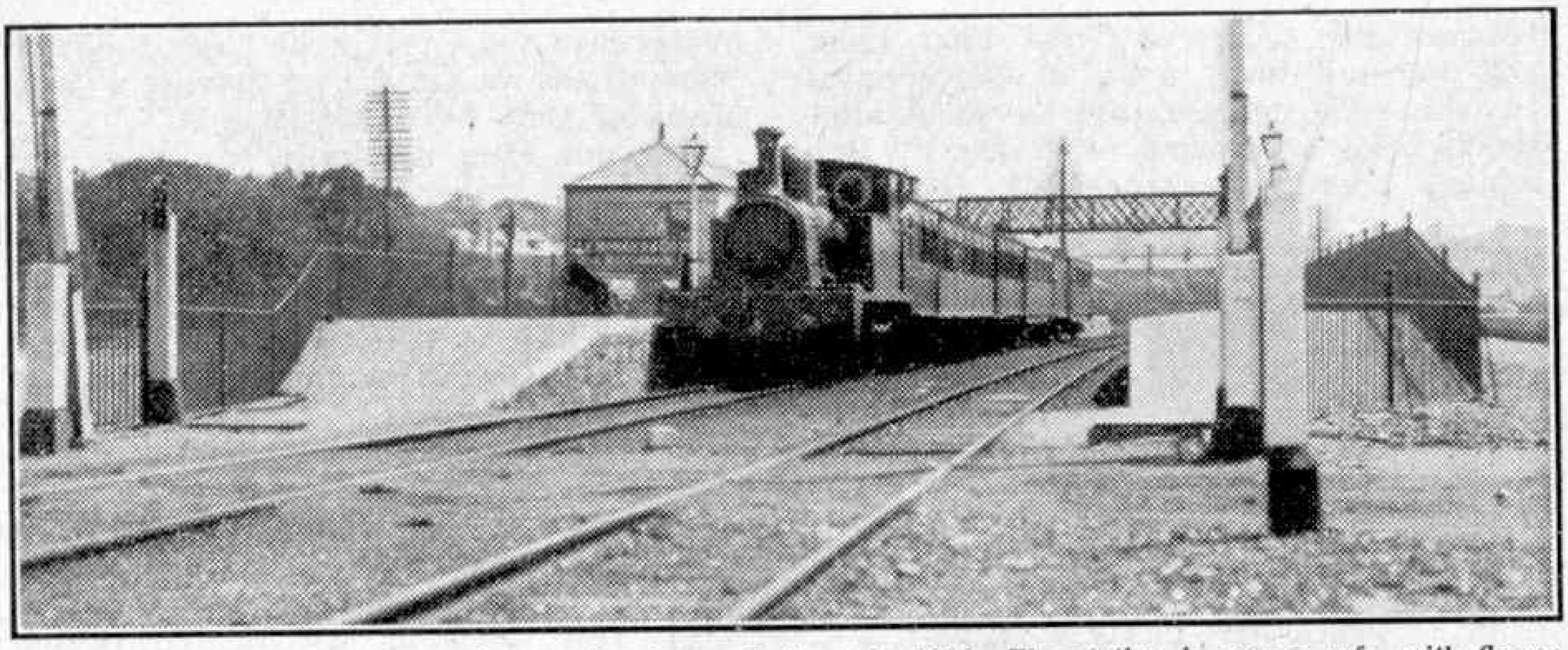
But not even dynamite can solve the problems of transport through the roaring rapids between Waterways and Eldorado Mine. All told the ore has to be unloaded and loaded 16 times on the 1,000-mile journey from the mine to the uranium warehouse at Waterways. Through this warehouse, 425 ft. in length, passes almost unlimited potential atomic power, but at what a price in endeavour.

The ore sacks have to be handled four times in one 38-mile stretch on the Slave River, which flows from a lake almost the size of Eire into another larger than Britain. At the beginning of the rapids they are unloaded into trucks, which transport them down the river to the end of the rapids for reloading into a second string of barges, and a few miles farther on they are unloaded once again and loaded into the lake boats of Great Bear Lake.

At another point the skipper of a barge train, a mountain of a man with pale blue eyes, cheeks like red balloons and hands the size of hams, points at the current swirling between rocky banks. "It's like that for five miles. Takes us 14¾ hours to make through against the current, and 45 min. for the return journey. Believe me, sometimes I wonder how we get through at all either way!" (*Continued on page 142*)



One of the 120 ft. barges that carry uranium ore from Eldorado to Waterways, where it is loaded on rail for transport to the Refinery at Port Hope, Ontario.



Millbrook Station and level crossing on the Jersey Railway in 1914. The station is now a cafe, with flower gardens in place of the track shown in this picture.

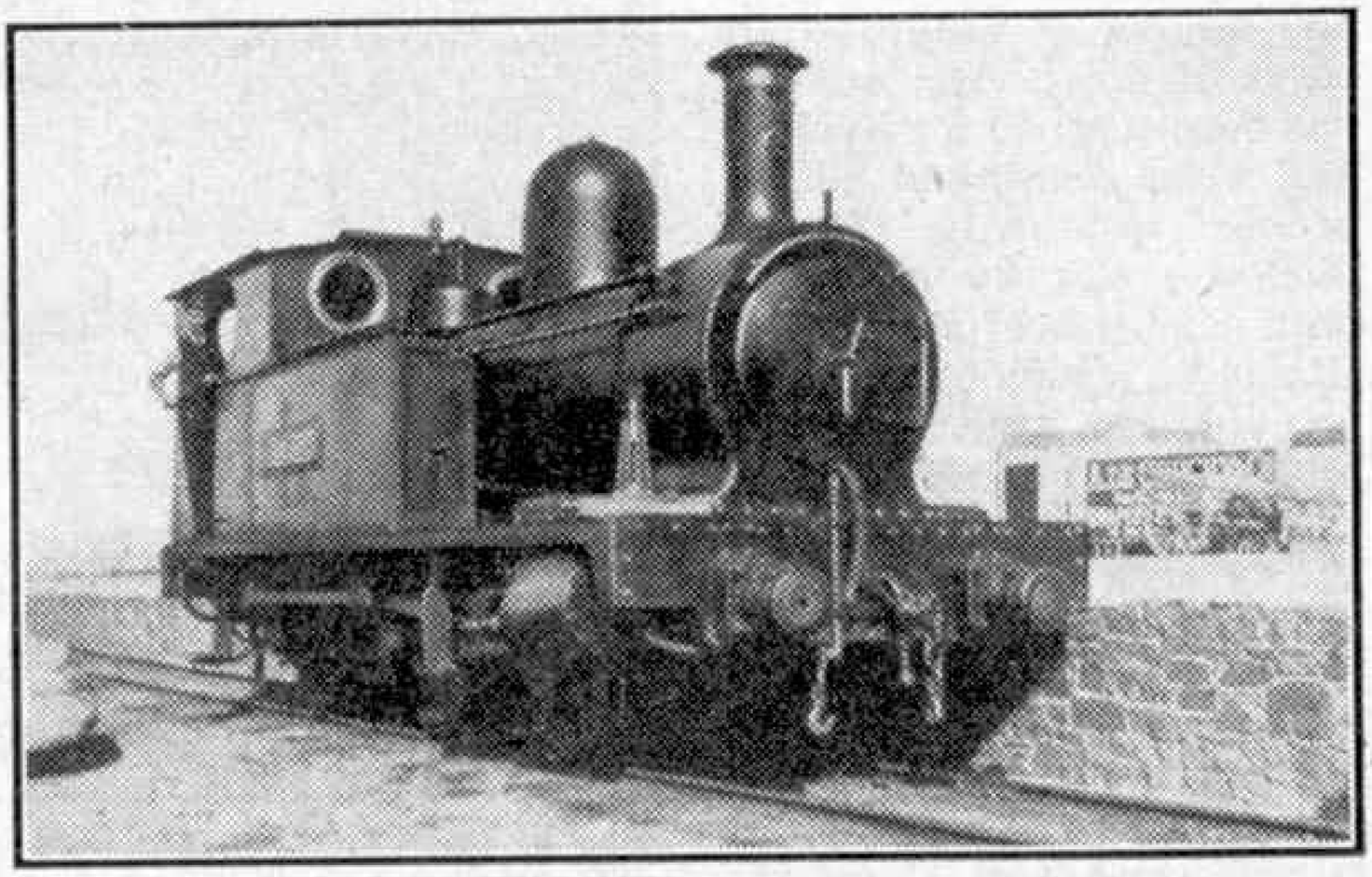
The Jersey Railway

By Edwin Dale

THE standard gauge line of the original Jersey Railway from St. Helier round the bay to St. Aubin, a distance of 3¾ miles, was opened to the public on 25th October 1870. An extension to Corbiere, built to the 3 ft. 6 in. gauge and making a total distance of 7¾ miles, was fully opened on 5th August 1885, and by then the earlier section had been reconstructed to this narrower gauge. There were several very sharp curves on this last section but a tunnel was bored in later years, about 400 yards from St. Aubin, which avoided one very bad curve. Eventually, after financial difficulties, the line passed into the hands of the Jersey Railways and Tramways Ltd.

The run through the hills was delightful, the terminus at Corbiere being nearly on the edge on the cliffs overlooking the sea and the famous Corbiere Lighthouse. The first engines to be used were small 2–4–0 saddle tanks and their trains consisted of fairly open carriages. A few years later larger engines were introduced, these being 2–4–0 side tanks. No. 1 was named *"St. Helier,"* No. 2 *"St. Aubin,"* No. 3 *"Corbiere,"* and No. 4 *"St. Brelades."* About 1898 a larger engine, No. 5, was added, named *"La Moye."* After the first world war business declined owing to the coming of the motor bus, so between 1923 and 1929 the company bought several "Sentinel" steam railcars to cut down running expenses.

The bulk of the carriages in use were about 40 ft. long, some with seats running the whole length each side; so one could walk through on to an end platform outside and there, guarded by a rail, view the scenery in the fresh air. There were other carriages about 25 ft. long with separate compartments seating eight. First and second class accommodation only was provided and our six-coach express, non-stop from St. Aubin to



Jersey Railway engine No. 4 "St. Brelades" shunting at Millbrook

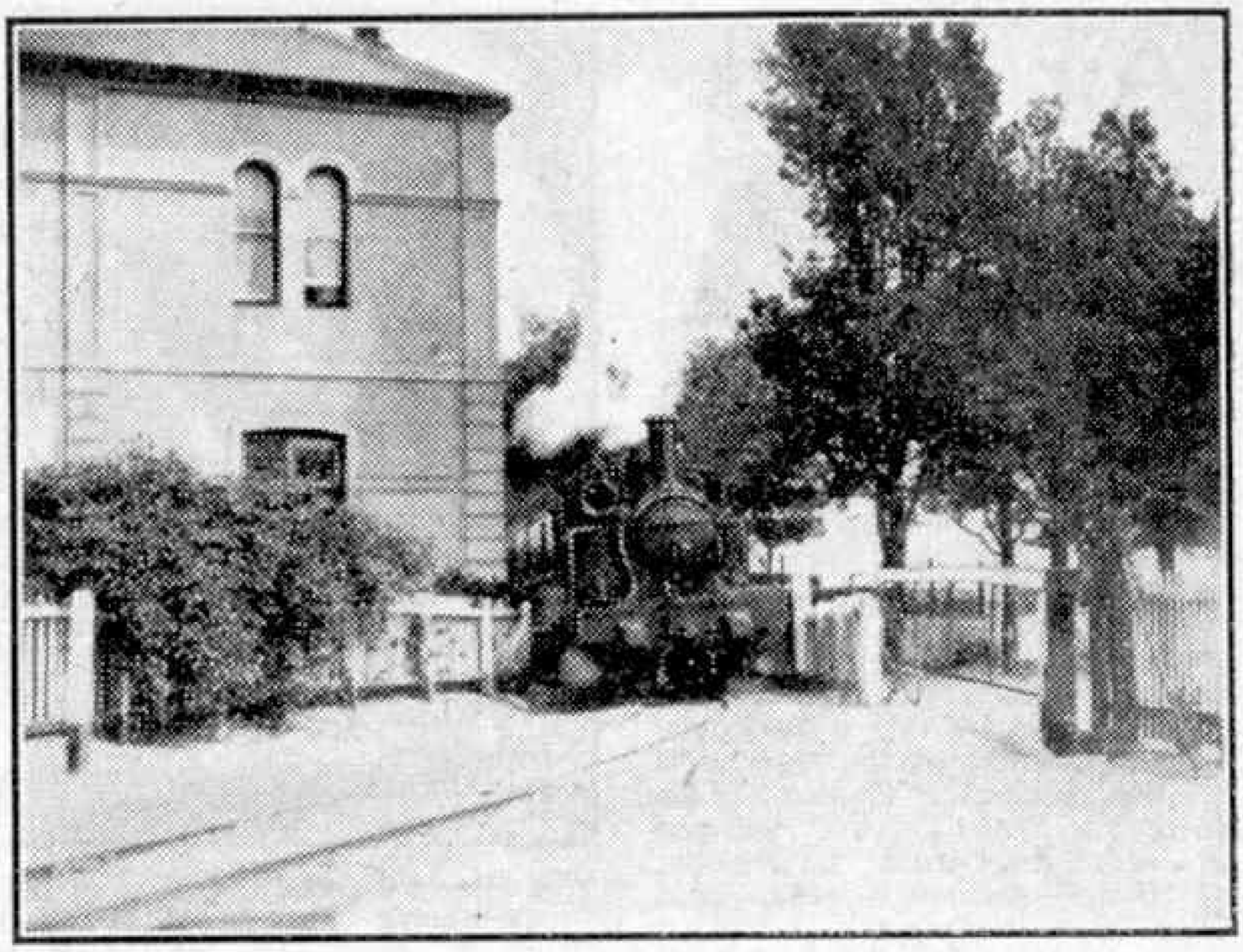
West Park, St. Helier, used to do the distance of 4 miles in approximately 6½ minutes.

Traffic declined and eventually the Jersey Railways and Tramways took over the rival Jersey Motor Transport concern, and the trains ceased to run in the winter. The track was then removed and laid out as a nice walk.

With the German Occupation in 1940, the track was re-laid by foreign labour for transporting materials for making the fortifications all around the island. In fact additional track was laid, much in excess of that originally in use. Dozens of French engines and hundreds of wagons were brought from France and Poland, but these were all removed after the end of the War, and in 1946 all tracks were again removed.

Now, the German bunkers near the line are overgrown with grass, shrubs and flowers, and our St. Helier front of about four miles is back to its old beauty. The town terminus of the old railway is used as a depot for Jersey Motor Transport, which took the place of the former railway, but the St. Aubin terminus was demolished some years ago. The intermediate stations are now used as tea rooms.

Finally, for intending visitors to Jersey, there is a lovely walk from St. Aubin to Corbiere where the old line ran, and every niche and corner is filled with shrubs and flowers all the way to Corbiere.

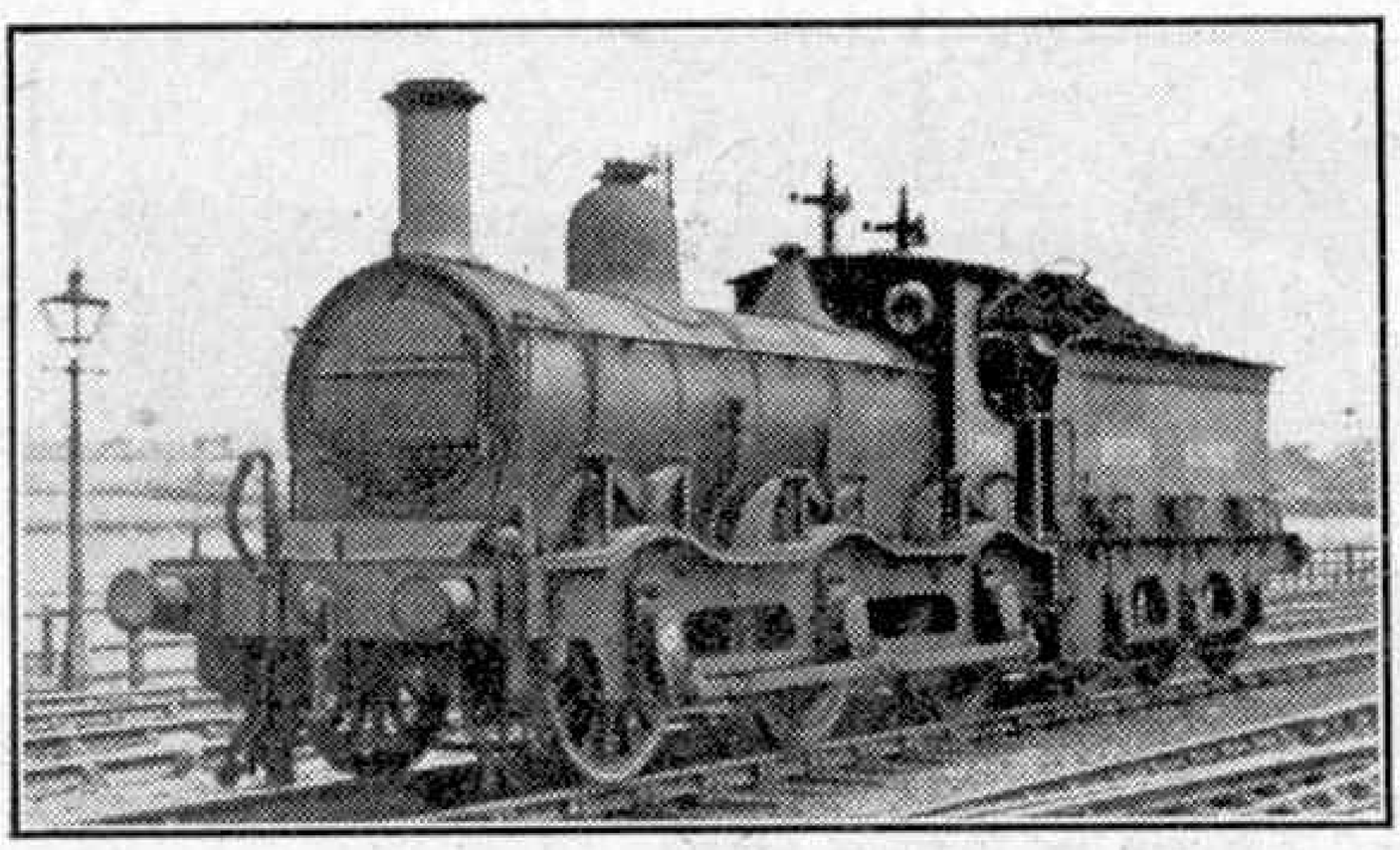


A train leaving St. Aubin hauled by No. 4 "St. Brelades" rounds one of the difficult curves before reaching the tunnel. Note the barrier-type crossing on the right of this photograph.

A Kirtley Veteran

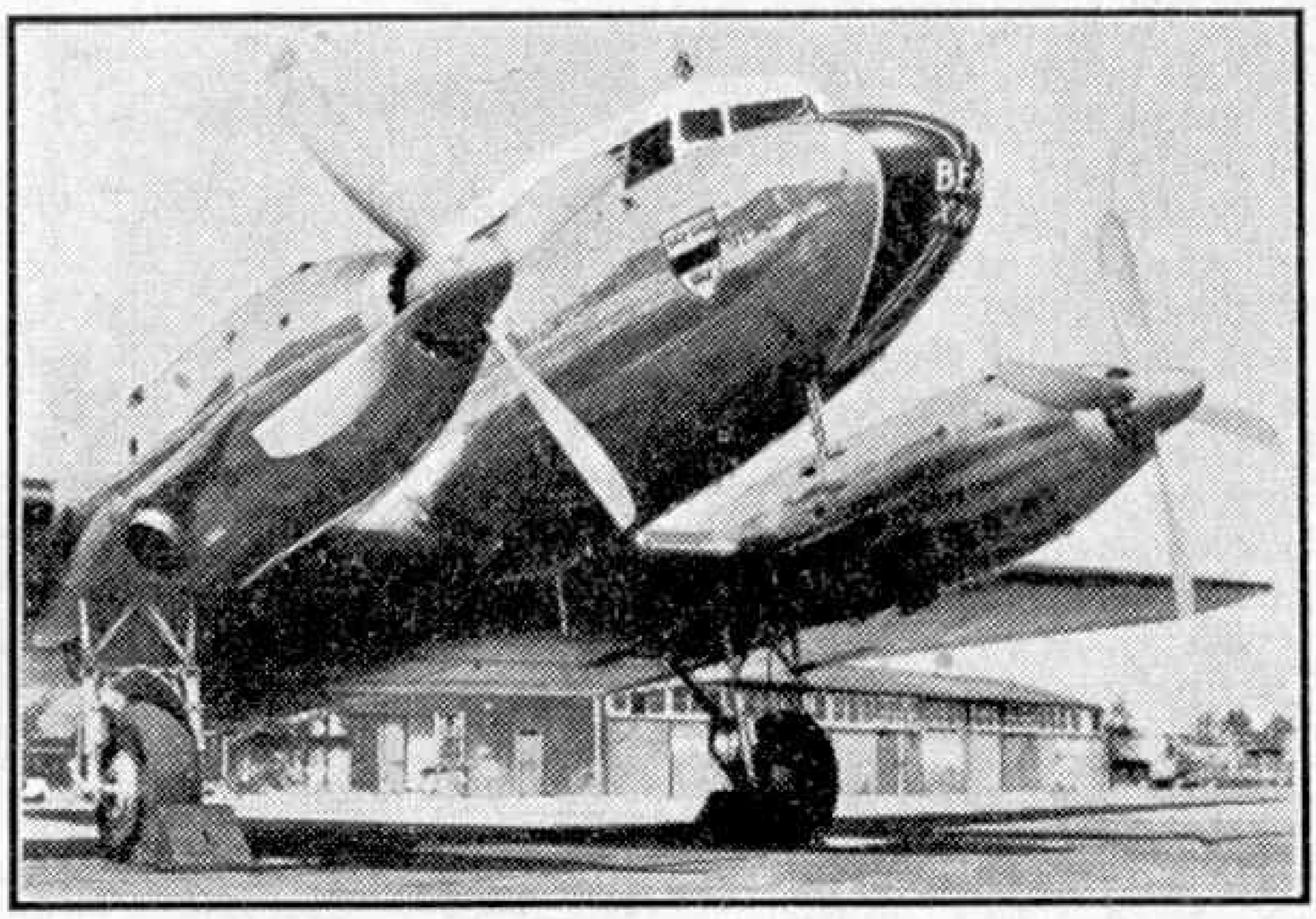
This photograph, by V. K. Pullin, Derby, shows an engine that had put in 82 years' service before its recent retirement. This, B.R. No. 58110, was the last of the tough double-framed Kirtley 0–6–0s of the old Midland Railway that were built between 1863 and 1874. These 0–6–0s were characteristic of the Midland locomotive scene for many years and even after the coming of later 0–6–0s much important mileage was still worked by them. Even in their "middle age" they were frequently to be seen as pilot engines in the procession of long coal trains constantly passing south from Toton and Wellingborough, but light local goods and shunting turns gradually became their lot. No. 58110 was so employed at Derby during its last months of active service.

Basically at least, No. 58110 had changed little since it first took the road as M.R. No. 778. A somewhat narrow, rather Spartan cab was added many years ago to replace the simple weather board with turned-over top edge that was first provided to "protect" the enginemen. The boiler carried in the latter part of the engine's career was of the Johnson type and this retained its round-top fire-box and typical fittings until the end.



Air News

By John W. R. Taylor



"Sir Henry Royce," the first of B.E.A.'s two "Dart"-powered "Dakota" freighters. Photograph by courtesy of British European Airways.

Another B.E.A. "First"

Following their enterprise and achievement in operating the world's first regular helicopter passenger services, and the first services flown by a propjet-powered air liner, British European Airways have passed another milestone in aviation history by operating for several months the world's first propjet-powered freight 'planes.

The aircraft one of which is illustrated on this page, are specially converted "Dakotas," each powered by two Rolls-Royce "Dart" propjets of the type used in the Vickers "Viscount" air liner. The "Dart-Dakota" will not go into large-scale production; but B.E.A. decided to order these two prototypes, named appropriately "*Sir Henry Royce*" and "*Claude Johnson*," to give their air and ground crews experience in the operation of "Dart" engines before their "*Discovery*"-class "Viscounts" are delivered late this year.

14,000 ft. Take-Off

The highest recorded landing and take-off ever made were completed recently by Georges Andre Zehr of La Chaux-de-Fonds, Switzerland, when he flew his veteran 65 h.p. Piper L-4 "Cub" on to a runway prepared by Swiss guides 14,200 ft. up the steep slopes of Mont Blanc, the highest mountain in Europe.

Air Attacks on Locusts

The successful use of six Piper "Super Cubs" in Iran, to combat the worst locust plague experienced by that country in 80 years, has resulted in a fleet of three more "Super Cub" insecticide-sprayers being delivered by air to combat similar locust damage in Pakistan.

Italian Amphibian

The neat little Piaggio P.136 amphibian, illustrated below, is typical of the first-class aeroplanes being produced by the rejuvenated Italian aircraft industry. It is a five-seater, with a wing span of 43 ft. 11 in. and loaded weight of 5,500 lb., and is powered by two 215 h.p. American Franklin engines, arranged as pushers.

The P.136 is a little smaller than our own Short "Sealand" amphibian, but has an excellent performance, with a range of 400 miles at 149 m.p.h. with full load. A total of 14 P.136s have been ordered by the Italian Air Force for training and coastal reconnaissance duties.

More Car Ferry News

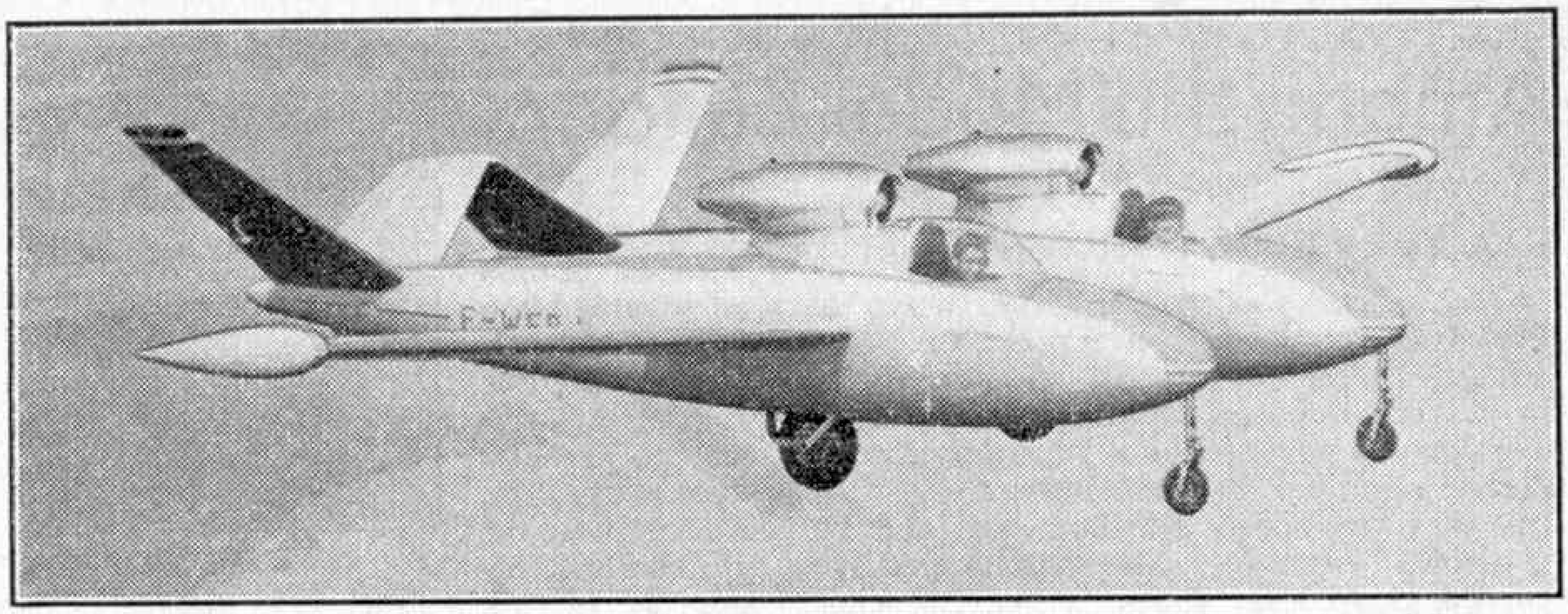
To meet the ever-increasing demand on their cross-Channel car ferry service, Silver City Airways have ordered six specially-designed, long-nosed Bristol "Freighters," at a cost of £90,000 each. The new aircraft will be able to carry three small cars instead of two, plus 20 passengers instead of the 12 carried by the company's eight standard "Freighters" now in use. To give the extra 4 ft. 10 in. of cabin space the nose of the new version will be streamlined to meet nose-doors positioned much further forward of the cockpit—a change that will necessitate a much taller fin and rudder.

Silver City have also signed contracts to carry between 35,000 and 45,000 lb. of cheese to Britain each week from France, so avoiding the necessity of flying their "Freighters" back to England with empty holds after delivering export motor cars and livestock to the Continent.

* * * *

When a Bristol "Freighter" left Lyneham recently on its delivery flight to Australia it carried in its hold a complete Bristol 171 "Sycamore" helicopter. Both aircraft are now in service with the R.A.A.F.

The Piaggio P.136 amphibian, showing the retractable undercarriage and the wing-tip floats. Photograph by courtesy of Piaggio and Company, Geneva.



Seeing double! The Fouga Gemeaux two-seat twin-jet light aircraft. Photograph by courtesy of Reportage Airmondial, Paris.

Seeing Double!

Any airman encountering for the first time the little French Fouga "Gemeaux I," shown above, might well think that his eyes were deceiving him, for it consists of two fuselages and two wings of the well-known Fouga "Cyclope" jet-powered light 'plane, joined together Siamese twin-like by a centre wing section and a tail strut. It retains all the basic features of the "Cyclope," and thus has two cockpits—one in each fuselage—two 242 lb. thrust Turboméca "Piméné" baby jet engines, a double "butterfly" tail and four wheels. The streamlined objects at its wing-tips are landing skids.

Later versions of this interesting aircraft include the "Gemeaux III," with a single 792 lb. thrust Turboméca "Marbore II" jet engine mounted above its wing centre-section, and the "Gemeaux IV" which has one of the revolutionary new Turboméca "Aspin I" ducted fan turbojets. Their sailplane appearance belies their performance. The 'Gemeaux III," for example, can fly at 236 m.p.h., and has an initial rate-of-climb of 1,578 ft. per min.

Quick-Change "Vikings"

By the time the new "Popular Fare" cheap services on the London-Paris route come into operation next October, all B.E.A.'s fleet of 49 "Vikings" will have been converted into "quick-change artists," capable of playing any of five different roles.

At short notice, each machine will be convertible into a 24-passenger luxury air liner with reclining seats, hot-meal catering and bar; a 27-seat hot-meal and bar aircraft; 34-passenger cold-meal and bar aircraft; "Tourist" version carrying up to 38 passengers with light refreshments only; or a two-class air liner with 12 cheap-fare "Tourist" seats in the front cabin and 15 luxury reclining seats in the rear cabin—the first two-class air liners in the world.

Flying Horses

During 1951 K.L.M. Royal Dutch Airlines carried across the Atlantic 50 race-horses, valued at more than £300,000. This is the greatest number of horses ever to fly the Atlantic in one year, and is striking evidence of the increasing use of air transport by bloodstock breeders in England and Ireland, due largely to the initiative of K.L.M. who devised special mobile horse stalls and loading ramps for use with their "Skymaster" freighters.

"Avitruc" Versatility

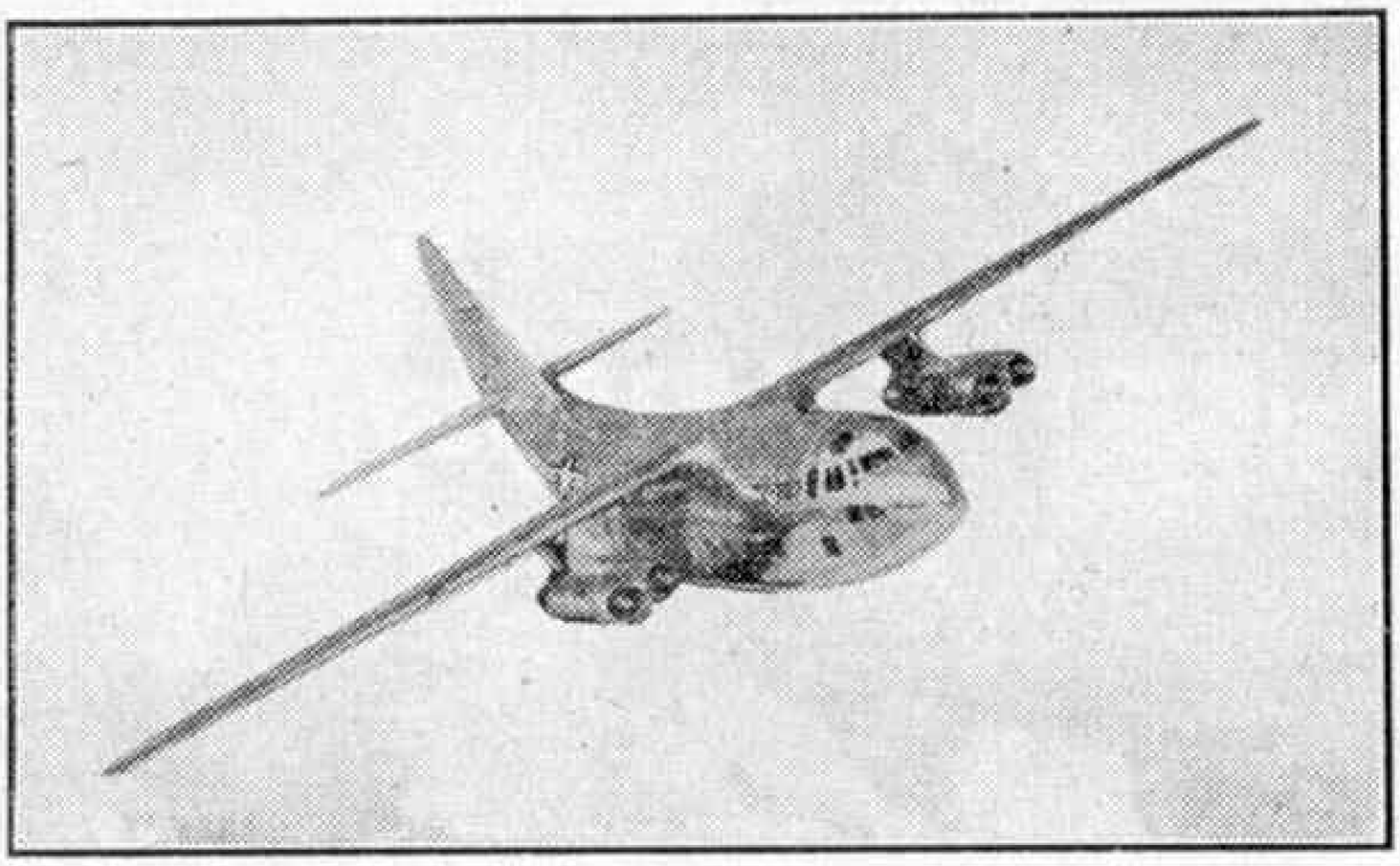
Incredible versatility has been displayed by the American Chase "Avitruc," which has now flown as a glider with no engines, a piston-engined troop and cargo-carrying transport with two 1,900 h.p. Pratt and Whitney "Double Wasps," and a jet transport with four 5,200 lb. thrust General Electric J-47 turbojets. In this last form, it is the first U.S. all-jet cargo-'plane to fly.

Purpose of the 3-in-1 experiment was to prove that one basic airframe can meet three different military requirements, and so speed production. It has proved successful, for the "Avitruc" can carry a 16,000 lb. payload as the XCG–20 glider, a 25,000 lb. payload at 245 m.p.h. as the piston-engined C–123, and the same load at well over 300 m.p.h. with jets. Although no plans have been announced for producing the jet "Avitruc," the Kaiser-Frazer car company are preparing to build up to three standard C–123 "Avitrucs" a day at their Willow Run factory when they have completed their production order for Fairchild "Packets."

* * * *

The Royal Canadian Air Force are to buy two D.H. "Comet" jet air liners at a cost, with spares, of $3½ million. They will be used to provide experience in the operation and maintenance of large jet aircraft, and to test Canada's air defences against fast, high-flying raiders.

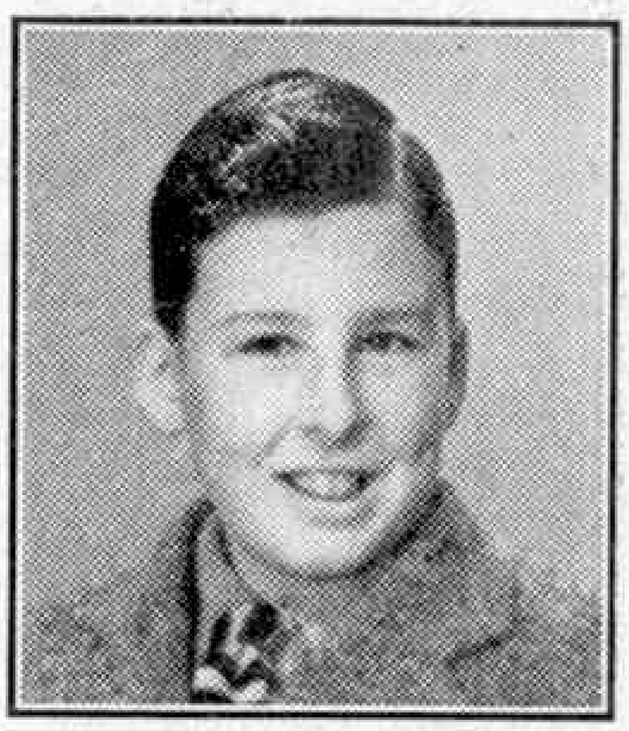
British Commonwealth Pacific Airlines have also ordered six "Avon"-powered "Comets," which they plan to introduce on their long route from Australia to North America in 1954.



Chase XC-123A, jet-powered sister to the C-123 troop and cargo-carrying transport. Photograph by courtesy of Chase Aircraft Co., Inc., U.S.A.

Among the Model-Builders

By "Spanner"



Brian Fraser, Palmerston North, New Zealand, builder of the six-wheeled lorry shown in Fig. 1.

A Young Reader's Successful Model

The six-wheeled motor lorry shown in Fig. 1 on this page won a prize for Brian Fraser, Palmerston North, New Zealand, in a recent model-building competition. The lorry is powered by a No. 1 Clockwork Motor mounted in the chassis, and this drives a two-speed gear-box that can be controlled from the cab. The final drive to the twin rear axles is by Sprocket Wheels and Chain. The model is fitted with working steering mechanism also operated through Chain and Sprockets.

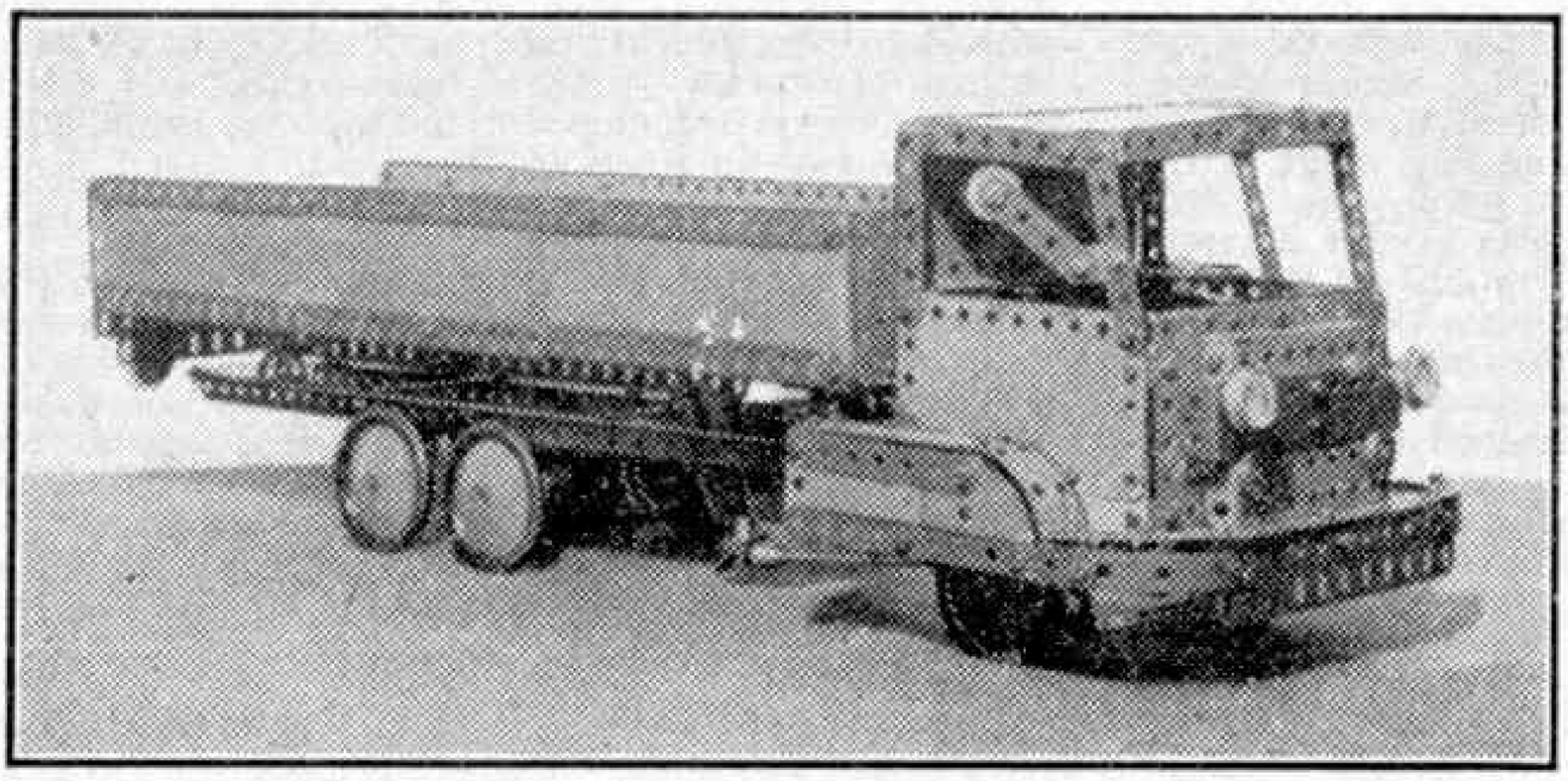


Fig. 1. The neat lorry built by Brian Fraser, who was awarded a prize in a recent "M.M." Competition.

The model is illustrated here in order to give younger model-builders encouragement to enter the *"M.M."* Competitions and to show them that it is not always the largest and most complicated models that win the prizes. The judges always give special consideration to neatness, sturdy construction and realism, and provided that a subject well within the scope of the Outfit the builder possesses is chosen, it is possible for even a quite simple model to possess all these features.

A Meccano Roundabout

Mr. J. W. Palmer, Johannesburg, South Africa, recently sent us details of several large Meccano models he has designed, and among these is the interesting roundabout illustrated in Fig. 2. In this ingenious model the riders are carried on the backs of swans mounted on a framework that revolves on an undulating track, which provides a rise and fall of approximately 3 in. on each side. The model can be operated either by a steam engine or an Electric Motor, or manually by turning a Crank Handle.

Automatic Reversing Mechanism

From time to time I have included in these pages descriptions of mechanisms designed to operate models automatically by reversing the direction of the drive at predetermined intervals. Another of these mechanisms is shown in

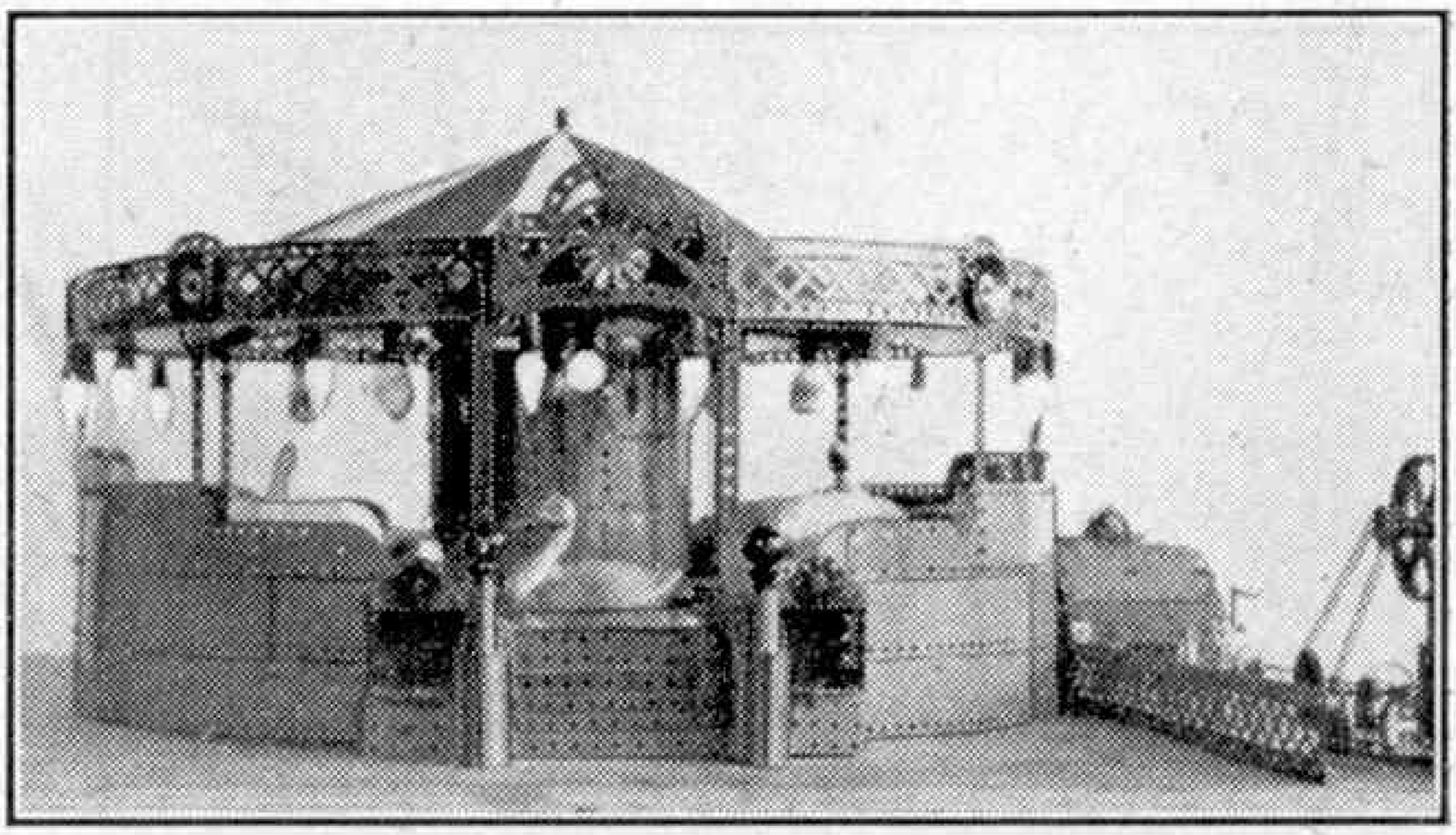


Fig. 2. This attractive roundabout is the work of J. W. Palmer, Johannesburg.

Fig. 3, and this example has two output shafts, either of which can be engaged, reversed or left in neutral, as desired. The mechanism will therefore set in motion an entire sequence of automatic operations. The output shafts are separately controlled and completely independent of each other.

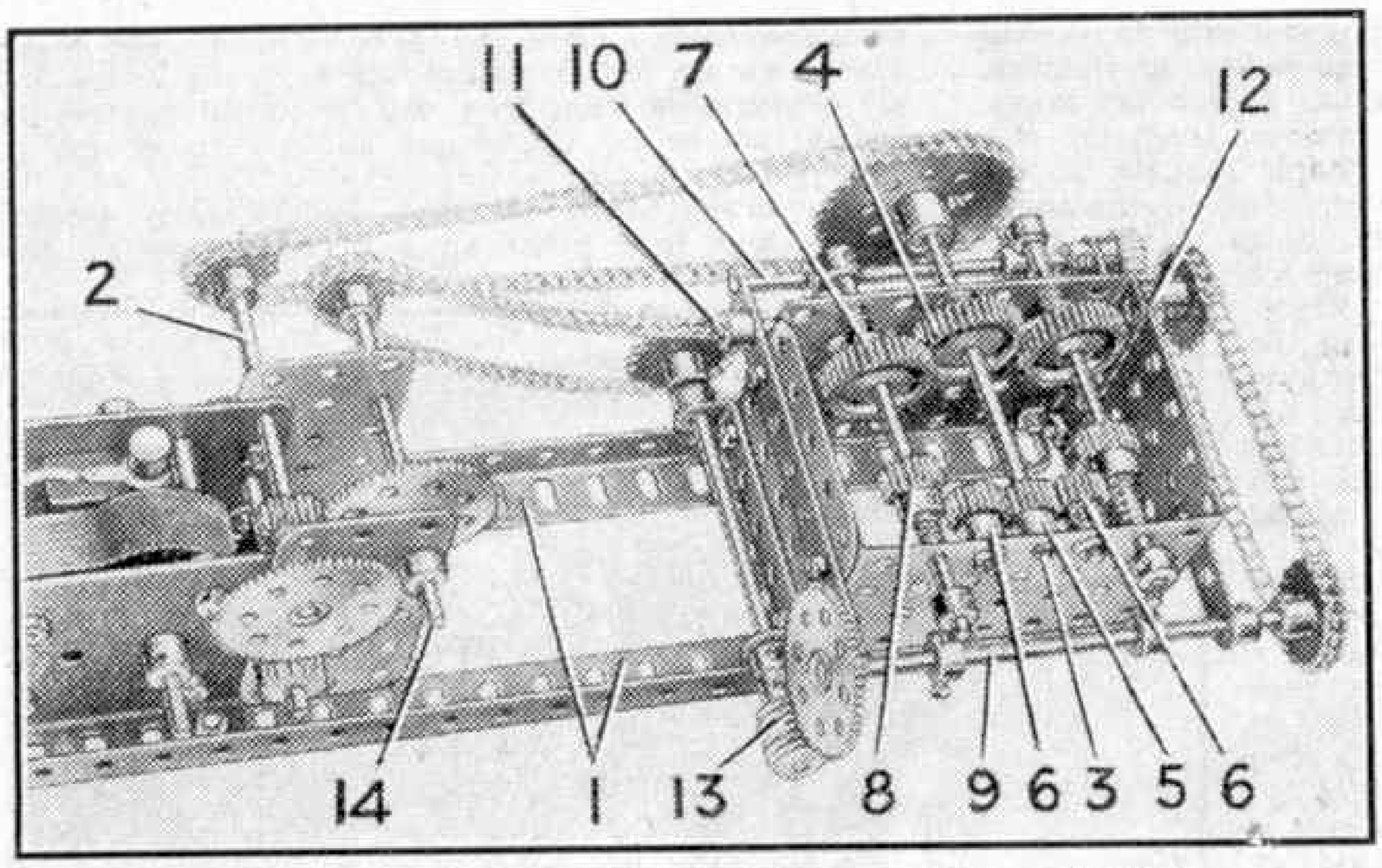


Fig. 3. An unusual type of automatic reversing mechanism.

The mechanism is housed between two $3\frac{1}{2}'' \times 2\frac{1}{2}''$ Flanged Plates connected by $2\frac{1}{2}'' \times 2\frac{1}{2}''$ Flat Plates and bolted to a base formed by $12\frac{1}{2}''$ Angle Girders 1. An E20R Electric Motor is fixed to the base, and reduction gears are mounted in $3'' \times 1\frac{1}{2}''$ Flat Plates bolted to the Motor side-plates. A $\frac{3}{4}''$ Sprocket on Rod 2 transmits the drive by Chain to a 2" Sprocket on the input shaft 3.

Shaft 3 is fitted with a 1" Gear 4 and a $\frac{1}{2}''$ Pinion 5. Pinion 5 meshes with two $\frac{1}{2}''$ Pinions 6, each free to turn on $\frac{3}{4}''$ Bolts attached by nuts to the housing. The output shafts are similar, and each consists of a Rod slideable in its bearings, but controlled by Compression Springs, fitted between the 1" Gear 7 and the $\frac{1}{2}''$ Pinion 8 and the sides of the housing. These Springs ensure that normally the shafts are in the neutral position.

The drive to each output shaft is engaged by sliding the shaft against the pressure of the Compression Springs so that either the Gear 7 is engaged with the Gear 4, or the Pinion 8 is meshed with the Pinion 6. Movement of the shaft is controlled by two cams, placed one at each end of the shaft, and by altering the setting of these the period and direction of the drive can be varied as desired.

Each cam consists of a Collar fitted with a $\frac{7}{32}''$ Bolt that bears against the end of the output shaft. The Collars are carried on Rods 9 and 10 mounted in $4\frac{1}{2}''$ Strips bolted across the housing. Rod 9 is linked by 1" Sprockets and Chain to a Rod 11, which is fitted with a $\frac{1}{2}''$ Pinion 12 that meshes with a similar Pinion on Rod 10.

The drive to the camshafts is transmitted by a Worm 13 to a 57-tooth Gear on Rod 9, and a 1" Sprocket on the Rod carrying the Worm is connected by Chain to a $\frac{3}{4}''$ Sprocket on Rod 14.

A Giant Block-Setting Crane

Most model-builders will be familiar with the magnificent model of a giant block-setting crane that is illustrated on the cover of the Meccano Instructions Books, and no doubt many of them would like to build it if they had the necessary parts. The illustration on the cover is reproduced from an artist's drawing of an actual model built in (*Continued on page 142*)

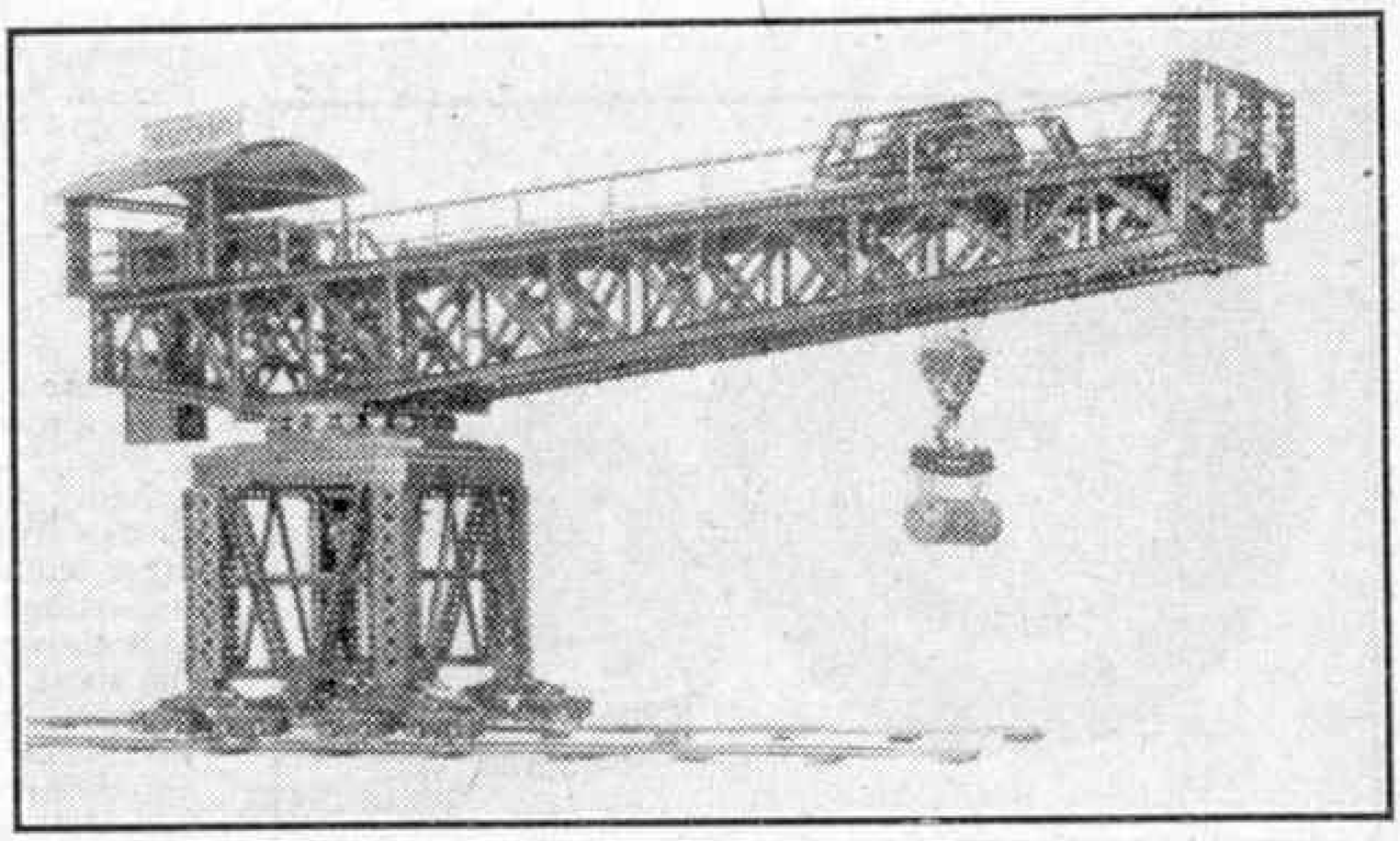


Fig. 4. Giant block-setting crane built by Mr. L. van de Laar, Rotterdam. Some details of it are given in the accompanying article.

Model-Building Made Easy

By "Spanner"

Simple Brakes for Cranes and Vehicles

IN most working models and especially in cranes and vehicles, an essential part of the mechanism is an efficient brake of some kind. There are many different kinds of brakes, but some of them are not suitable for use in small and simple models, so we need not mention them all here. One of the most useful and simple types is that shown in Fig. 1 on this page. This brake is suitable for use in models of many different kinds, especially cranes, where it can be used to control lowering of the load or jib. It is in fact used for the latter purpose in the model seen in part in Fig. 1, which shows the cab and mechanism of a small model excavator.

The brake consists of a piece of Cord tied at one end to a Bolt 5, and passed round a 1" Pulley fixed on a Rod, driven by a *Magic* Motor, that forms the winding drum for raising and lowering the excavator jib. The end of the Cord is then tied to a 2½" Curved Strip, which s pivoted on a Bolt in the side of the cab. On its outer end the Curved Strip carries a weight consisting of a ¾" Pinion or some other suitable heavy part. The effect of the weight is to keep the Cord constantly taut around the Pulley, and this prevents the jib from over-running the Motor and falling rapidly. In order to release the brake it is only necessary to lift the weighted lever slightly, so slackening the Cord around the Pulley.

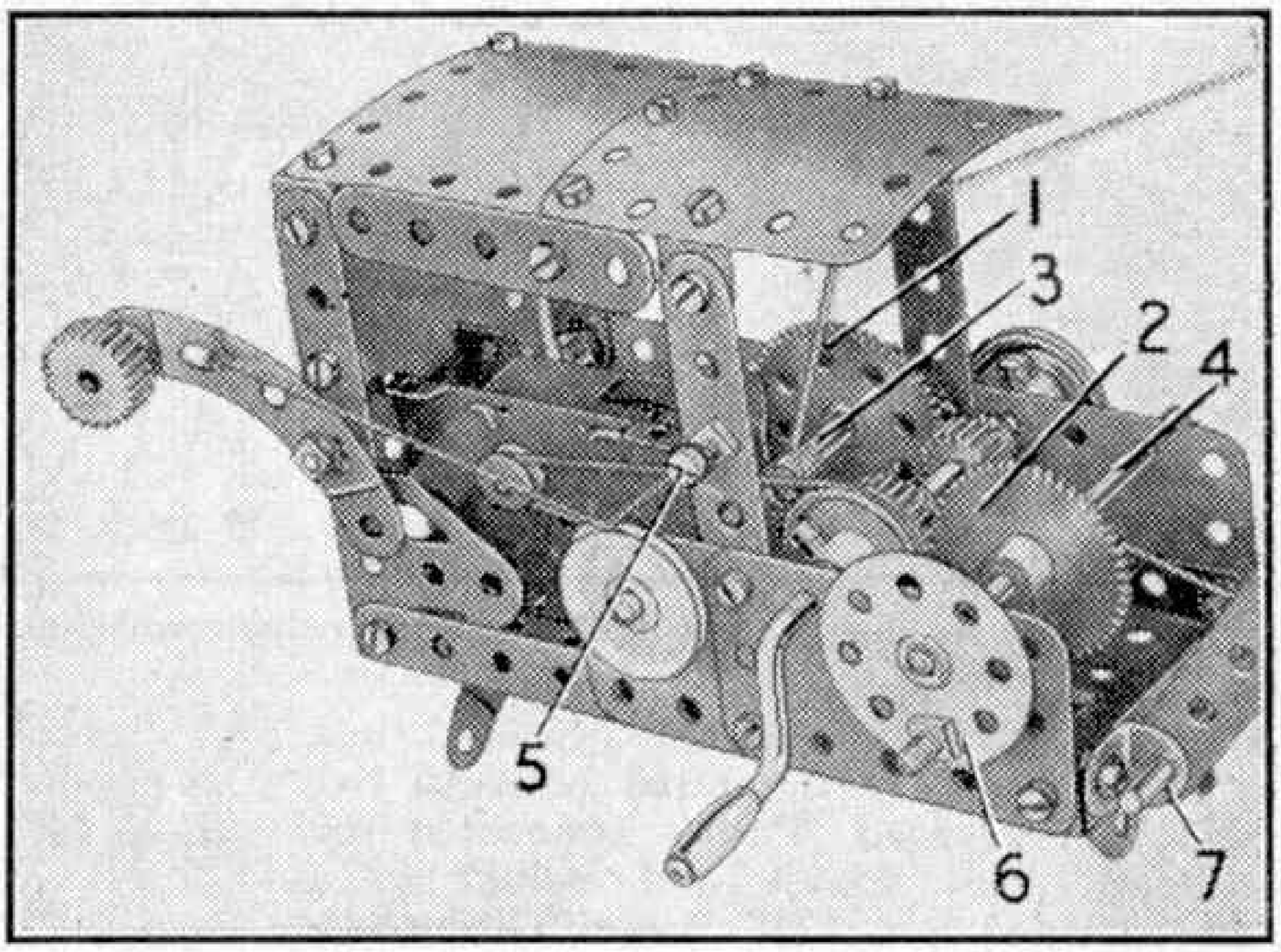


Fig. 1. A simple cord and pulley brake suitable for a crane winding drum.

In the arrangement described the braking effect is applied constantly and is released as desired, but a simple Cord brake of this kind can also be arranged so that the braking effect is applied only when desired. To do this it is only necessary to remove the weight from the lever. The brake is then applied when required simply by pressing on the end of the lever, so forcing it downward and pulling the Cord tightly around the 1" Pulley.

Fig. 2 shows one of the more simple brakes designed for use in model cars and lorries. It is known as an internal expanding brake and consists of two "shoes" arranged inside a drum that is fixed to the road wheel. The shoes are not free to rotate with the wheel, but are arranged so that they can be forced against the inside surface of the drum and so to retard its movement.

The brake shoes are two Bell Cranks without bosses, and they pivot on a ⅜" Bolt 1 lock-nutted to one of the slotted holes of a Face Plate. The actual braking surfaces are formed by Bolts 2, and a Driving Band looped around the heads of these Bolts is used to hold the shoes in the "off" position.

The brake is applied by turning a cam mounted between the free ends of the shoes so that they are forced outwards against the brake drum. The cam is a Collar 3 screwed on to a ½" Bolt. The Bolt is first fitted with a Fishplate fixed tightly in place by a nut, and is then passed through a second Fishplate bolted at the rear of the Face Plate. The purpose of the second Fishplate is to locate the ½" Bolt in the slotted hole of the Face Plate. A Washer is then placed on the shank of the Bolt, and the Collar 3 is screwed into position. The Grub Screw in the Collar is tightened against the shank of the ½" Bolt so that the Collar is fixed in place and must turn with the Bolt.

The Fishplate fixed to the ½" Bolt is connected by Cord or Rods to the brake lever.

As an alternative to the arrangement shown in Fig. 2 two short Strips curved slightly and suitably pivoted at one end, can be used for the shoes. Angle Brackets should be fixed to the other ends of the Strips and a small cam, consisting of a Collar arranged similarly to that shown at 3 in Fig. 2, can be used to force the shoes against the inside of the drum.

There are many other ways of constructing the brake shoes and of operating them, and numerous examples have appeared in the "*M.M.*" in the past. Some of them are particularly well suited for operation by cable control, which can be represented by thin strong wire encased in Spring Cord.

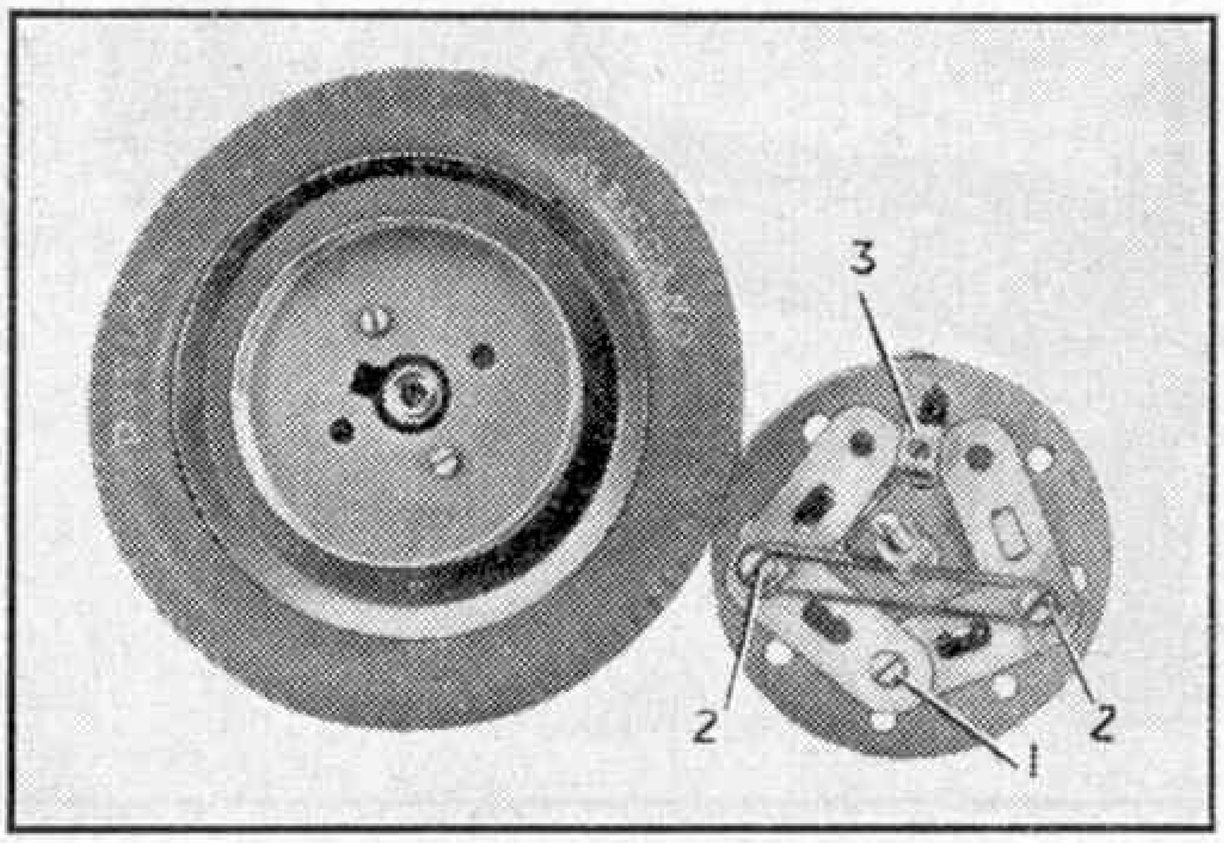


Fig. 2. An internal expanding brake specially designed for model car wheels.

Handsome Prizes for Meccano Models

No. 2 and No. 7 Outfit Competition

THIS month we announce the second of the "Outfit" Competitions, in wh ch fine cash prizes are offered for the best models made entirely from the parts in either a Meccano No. 2 or a No. 7 Outfit.

Models may be of any kind whatever, and all Meccano model-builders ar· eligible as competitors.

Entries will be divided into four groups. Section A, for models from Home readers built from Outfit No. 2; Section B, for models from Home readers built from Outfit No. 7; Section C, for models built by Overseas readers from Outfit No. 2; and Section D, for models built from Outfit No. 7 by Overseas readers. *Each Section is open to readers of all ages.*

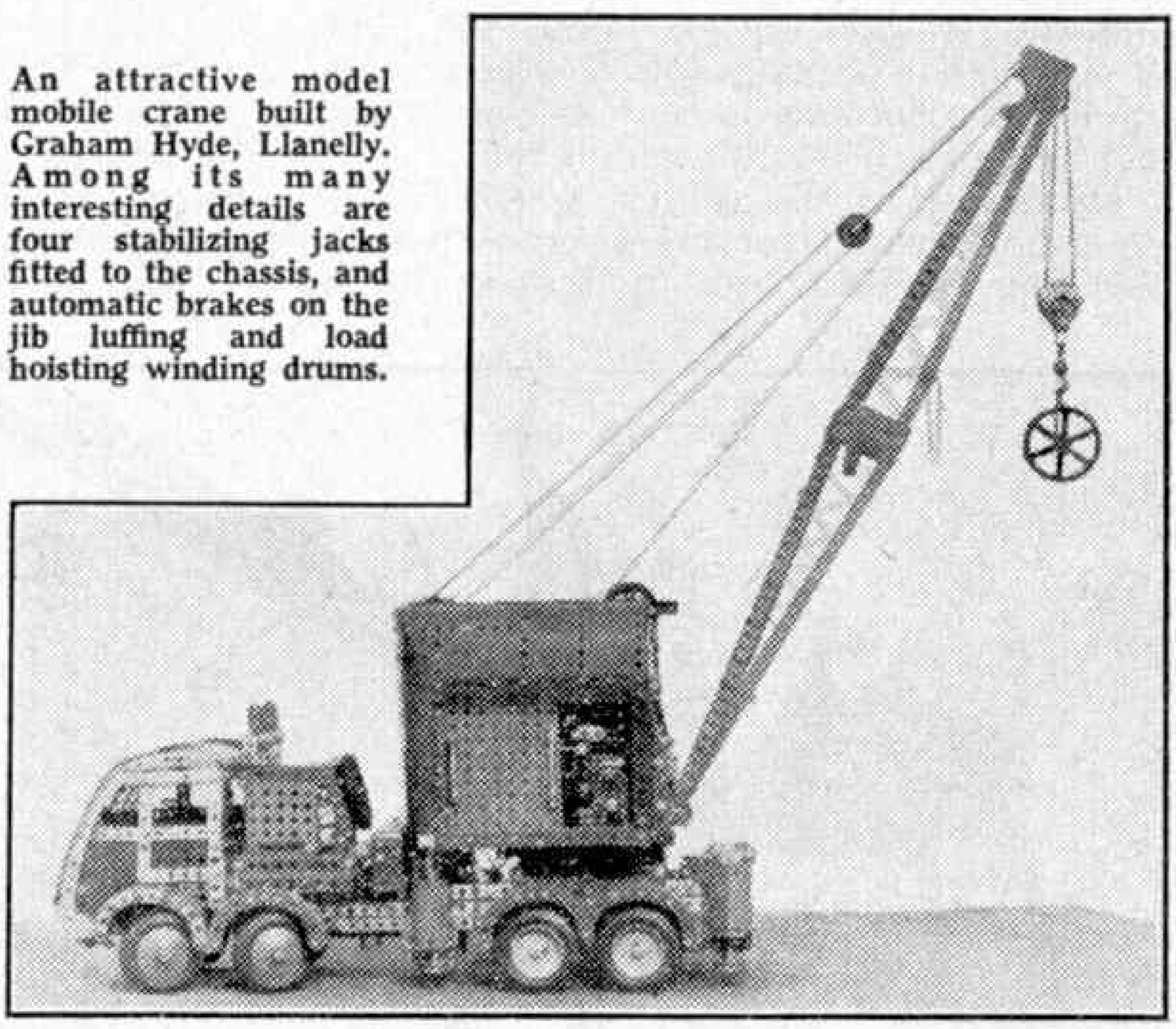
The prizes detailed in the panel on this page will be awarded in each Section of the Contest.

It is only necessary to send either a drawing or a photograph of the model. Competitors must enclose with their entry a list of parts used in the model, and must write their ages, names and addresses on the back of each photograph or drawing sent in.

Entries should be addressed *"March Outfit Competition, Meccano Ltd., Binns Road, Liverpool 13."* A letter A, B C or D must be marked in the bottom left-hand corner of the envelope to indicate the Section for which the entry is intended.

Entries for Home Sections A and B will be accepted up to 30th April 1952. The closing date for entries in the Overseas Sections C and D is 31st July 1952.

An attractive model mobile crane built by Graham Hyde, Llanelly. Among its many interesting details are four stabilizing jacks fitted to the chassis, and automatic brakes on the jib luffing and load hoisting winding drums.



MODEL-BUILDING COMPETITION RESULTS
"Meccano Parts Voting Contest"

The results of the voting for the Most Useful of the Meccano Parts listed on page 271 of the June 1951 *"M.M."* was as follows:

Home Section. (1) Fishplate; (2) Double Angle Strip 2½" × ½"; (3) Coupling; (4) Bush Wheel.

Overseas Section. (1) Fishplate; (2) Double Angle Strip 2½" × ½"; (3) Bush Wheel; (4) Coupling.

Readers will note the similarity of the voting in the two Sections, the only differences being the reversing of the parts that obtained the third and fourth places. No competitor succeeded in placing all four parts in the correct order as decided by the ballot and the prizes therefore were awarded to those whose entries came closest.

The lists of prizewinners are as follows:

Home Section.

First Prize, Cheque for £2/2/–: G. Pearce, London N.W.11. Second Prize, Cheque for £1/1/–: A. J. M. Harrison, Alvechurch, Worcs. Third Prize, Cheque for 10/–: A. H. Jones, Wallasey.

Five Prizes each of 5/–: W. M. Alexander, Middlesbrough; D. Hounsell, Longbredy, Dorset; K. F. Jennings, Cambridge; D. Hopkin, Gloucester; E. G. Newhouse, Wembley Park, Middlesex.

Overseas Section.

First Prize, Cheque for £2/2/–: M. George, Melville, W. Australia. Second Prize, Cheque for £1/1/–: F. Hopkinson, Mosman, N.S.W., Australia. Third Prize, Cheque for 10/–: D. McKie Masterton, New Zealand.

Five Prizes each of 5/–: J. A. Gomes, Bandra, Bombay 20: B. J. Truran, Lusaka, N. Rhodesia; N. G. Javaram, Bangalore 3, India; C. Fraser, St. Georges, Grenada, B.W.I.; B. Clerk, Westmount, Montreal, Canada.

No. 2 and No. 7
OUTFIT COMPETITION

THE PRIZES

A separate set of Prizes as follows will be awarded in each of the Sections A, B, C and D.

First Prize: Cheque for £3 3s. 0d.
Second Prize: Cheque for £2 2s. 0d.
Third Prize: Cheque for £1 1s. 0d.
Five Prizes each consisting of a Postal Order for 10/6
Five Prizes each consisting of a Postal Order for 5/–
Certificates of Merit also will be awarded.

August "Lynx-Eye" Contest
(Home Section)

First Prize, Cheque for £3/3/–: M. A. Calvert, Melbourne, Derby. Second Prize, Cheque for £2/2/–: P. Ponsford, Welling, Kent. Third Prize, Cheque for £1/1/–: S. L. Dow, Cupar, Fife.

Five Prizes each of 10/6: H. Perry, Smethwick 40; J. K. Hodgkins, Worcester; G. F. Watt, Bitterne, Southampton; C. E. Wrayford, Bovey Tracey, Devon; M. Schofield, Dewsbury, Yorks.

Five Prizes each of 5/–: P. J. Goodman, Beckenham, Kent; R. F. Sutton, Weston-Super-Mare; M. Forth, Grove Park, London; D. R. Davies, Harrow, Middlesex; D. Twyman, Sherwood, Nottingham.

New Meccano Models

A Quayside Unloader and an Electric Van

THE quayside unloader seen in Fig. 1 is designed so that it can be built from the parts in a Meccano Outfit No. 4. It represents a special type of travelling crane that is used at some docks for unloading ships' cargoes, and is the kind of model that provides lots of pleasure for the builder, not only in constructing it but in playing with it after completion.

Each side of the gantry, which is the main horizontal structure 1 supported by the four vertical legs, is formed by a $5\frac{1}{2}'' \times 2\frac{1}{2}''$, a $2\frac{1}{2}'' \times 1\frac{1}{2}''$ and a $5\frac{1}{2}'' \times 1\frac{1}{2}''$ Flexible Plate edged by a $12\frac{1}{2}''$ Strip. The upper edge of the $5\frac{1}{2}'' \times 2\frac{1}{2}''$ Flexible Plate is strengthened by a $5\frac{1}{2}''$ Strip 2, and a Semi-Circular Plate 3 is fixed in position on each side.

The sides are connected at the cabin end by a $5\frac{1}{2}'' \times 2\frac{1}{2}''$ Flanged Plate, and at the jib end by a $2\frac{1}{2}'' \times \frac{1}{2}''$ Double Angle Strip and a $2\frac{1}{2}'' \times 1\frac{1}{2}''$ Flanged Plate 4. The four legs that support the gantry are each formed by a $5\frac{1}{2}''$ Strip braced by a $2\frac{1}{2}''$ Strip 5. The gantry wheels are 1" Pulleys fitted with Motor Tyres, and they are fixed on $\frac{3}{8}''$ Bolts passed through the end holes of $5\frac{1}{2}''$ Strips 6. The Strips 6 are attached to Angle Brackets bolted to the legs.

A Flanged Sector Plate is fixed at each side of the gantry by Fishplates, and the Plates are connected across at the top by a $2\frac{1}{2}'' \times \frac{1}{2}''$ Double Angle Strip 7. A $3\frac{1}{2}''$ Rod 8 is mounted in $3\frac{1}{2}''$ Strips bolted to the Flanged Sector Plates and braced by Curved Strips. The Rod is held in position by Spring Clips.

The jib consists of two $12\frac{1}{2}''$ Strips joined by two $2\frac{1}{2}'' \times \frac{1}{2}''$ Double Angle Strips, and it pivots on a Crank Handle mounted in the Flanged Sector Plates.

The travelling carriage is made by bolting two Trunnions to $2\frac{1}{2}'' \times \frac{1}{2}''$ Double Angle Strips 9, which are free to slide along the $12\frac{1}{2}''$ Strips of the jib. A length of Cord tied at the rear of the carriage is passed two or three times round the Crank Handle, and is taken over a Rod 10 at the end of the jib. The Cord is then fastened to the front of the carriage.

The jib is luffed by a length of Cord extending from a Rod 11. This Rod is mounted in the sides of the cab and carries a Bush Wheel, which is fitted with a $\frac{3}{8}''$ Bolt to serve as a winding handle. The Cord is passed over Rod 8 and round Rod 10, and finally is tied to Rod 8.

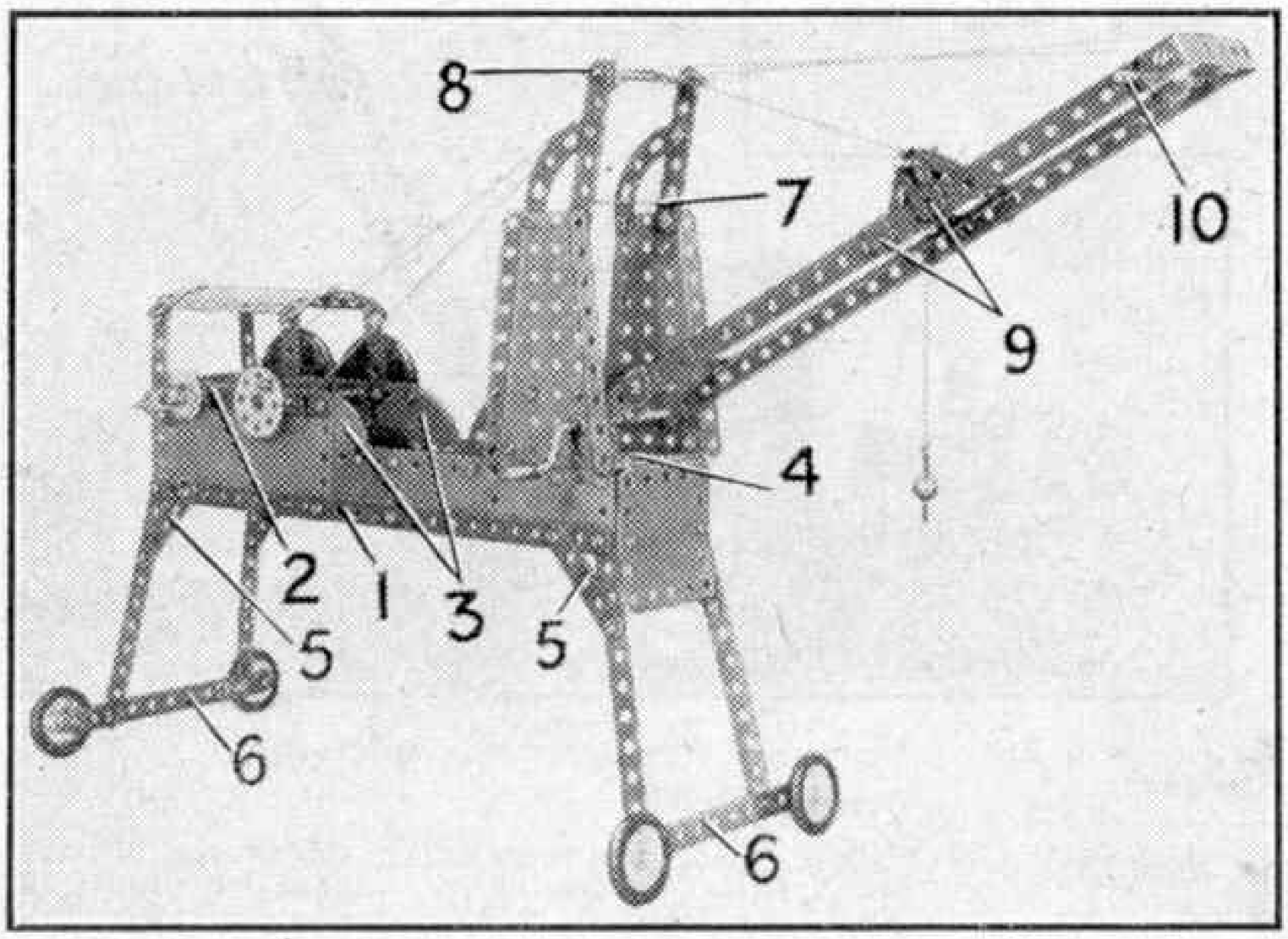


Fig. 1. A special type of crane used on quaysides for unloading ships' cargoes. The model can be built from Outfit No. 4.

The hoisting Cord is tied to a Rod 12 mounted in the cab sides, and is passed over Rod 8 and a 1" Rod carried in the Trunnions of the travelling carriage. The handle on Rod 12 is formed by a $\frac{3}{8}''$ Bolt fixed by a nut to an Angle Bracket. The Angle Bracket is then attached to the boss of a 1" Pulley by a nut and bolt. The bolt is fitted with a nut and passed through the Angle Bracket into the boss of the Pulley, and the nut is then tightened to fix the Angle Bracket in position.

The roof of the cab is a $4\frac{1}{2}'' \times 2\frac{1}{2}''$ Flexible Plate attached by Obtuse Angle Brackets to $2\frac{1}{2}''$ Strips fixed to the sides.

Parts required to build Quayside Unloader: 4 of No. 1; 8 of No. 2; 2 of No. 3; 9 of No. 5; 4 of No. 10; 7 of No. 12; 4 of No. 12c; 1 of No. 15b; 3 of No. 16; 1 of No. 18b; 1 of No. 19g; 5 of No. 22; 1 of No. 23; 1 of No. 24; 8 of No. 35; 78 of No. 37; 2 of No. 37a

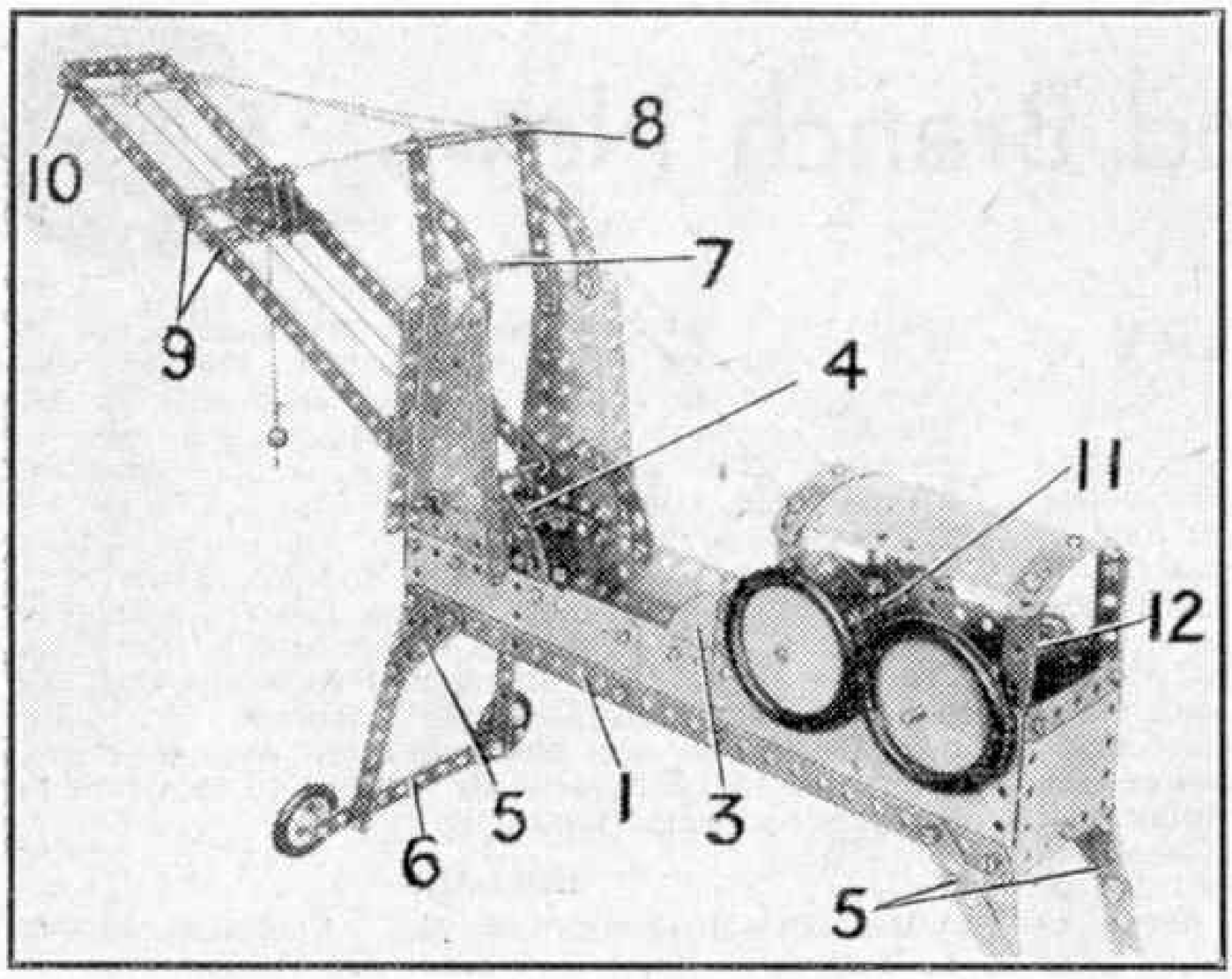


Fig. 2. The quayside unloader, seen from the side opposite to that shown in Fig. 1.

5 of No. 38; 1 of No. 40; 6 of No. 48a; 1 of No. 51; 1 of No. 52; 2 of No. 54; 1 of No. 57c; 4 of No. 90a; 6 of No. 111c; 2 of No. 126; 4 of No. 142c; 2 of No. 187; 2 of No. 188; 2 of No. 189; 2 of No. 190; 1 of No. 191; 2 of No. 192; 2 of No. 214; 2 of No. 215.

Our second model is an electrically driven van of the type often used nowadays by dairy men for milk delivery. The model is shown in Fig. 3. It is assembled on a $5\frac{1}{2}'' \times 2\frac{1}{2}''$ Flanged Plate 1 that forms the load platform. A $5\frac{1}{2}'' \times 1\frac{1}{2}''$ Flexible Plate is bolted to each of the longer sides of the Flanged Plate, and a $5\frac{1}{2}''$ Strip 2 overlaps each Flexible Plate by three holes to form the side of the driving compartment. A $2\frac{1}{2}''$ Curved Strip 3 is used to fill in part of the side as shown.

The rear wheels are 1" Pulleys fitted with Motor Tyres, and they are fixed on a $3\frac{1}{2}''$ Rod mounted in Flat Trunnions. The Flat Trunnions are bolted to the $5\frac{1}{2}'' \times 1\frac{1}{2}''$ Flexible Plates by the Bolts 4. The front wheels are also 1" Pulleys fitted with Motor Tyres and are fixed on an axle carried in a Fishplate 5 at each side of the model.

The front of the driving compartment is a U-section Curved Plate opened out slightly and extended one hole by a $2\frac{1}{2}'' \times 1\frac{1}{2}''$ Flexible Plate 6. It is fixed underneath to a $2\frac{1}{2}'' \times \frac{1}{2}''$ Double Angle Strip bolted between the Strips 2. The windscreen frame is formed by two $2\frac{1}{2}''$ Strips connected at their upper ends by a $2\frac{1}{2}'' \times \frac{1}{2}''$ Double Angle Strip 7.

The roof is carried by supports on each side made from two $2\frac{1}{2}''$ Strips connected by a $5\frac{1}{2}''$ Strip. The roof consists of a $4\frac{1}{2}'' \times 2\frac{1}{2}''$ Flexible Plate extended by a $1\frac{11}{16}''$ radius Curved Plate, and is attached to the supporting framework and to the windscreen by Angle Brackets, which should be opened out slightly, to allow for the curvature of the roof.

The rear of the body is filled by a $2\frac{1}{2}'' \times 2\frac{1}{2}''$ Flexible Plate, and a similar part is used as a partition between the driving compartment and the load space. Both Flexible Plates are bolted to the short flanges of the Flanged Plate 1.

The fun obtained in building and operating the van can be greatly increased if a *Magic* Clockwork Motor is available, as it can be fitted quite easily to the model. The Motor should be bolted in a horizontal position underneath the $5\frac{1}{2}'' \times 2\frac{1}{2}''$ Flanged Plate 1, as near as possible to the driving compartment.

Parts required to build Electric Milk Delivery Van: 4 of No. 2; 6 of No. 5; 4 of No. 10; 6 of No. 12; 2 of No. 16; 4 of No. 22; 40 of No. 37; 4 of No. 38; 2 of No. 48a; 1 of No. 52; 2 of No. 90a; 1 of No. 125; 2 of No. 126; 2 of No. 126a; 4 of No. 142c; 2 of No. 188; 2 of No. 189; 2 of No. 190; 1 of No. 191; 1 of No. 199; 1 of No. 200.

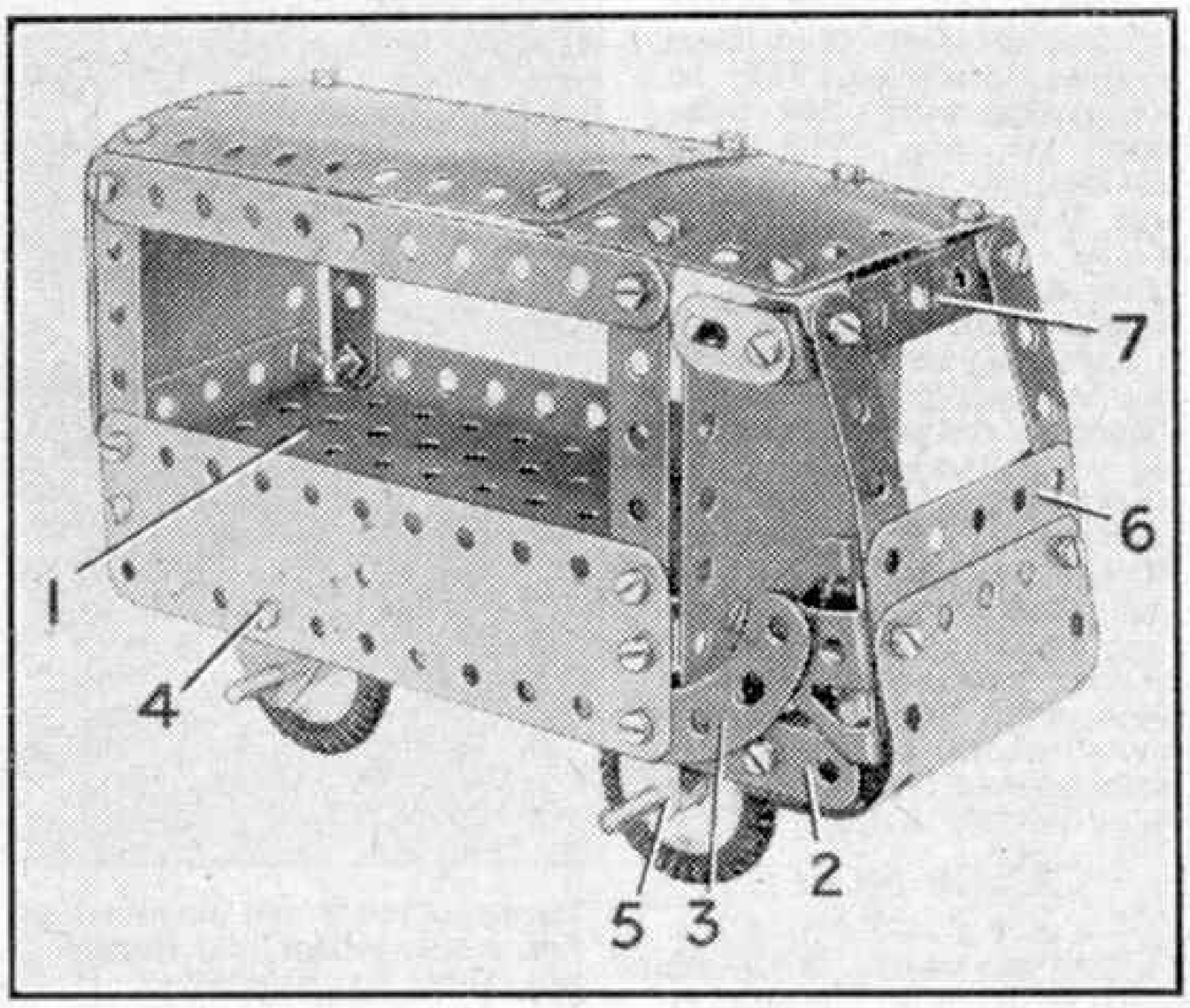


Fig. 3. An electric milk delivery van designed for construction from Outfit No. 2.

Club and Branch News

WITH THE SECRETARY

EXHIBITION PLEASURE

The month of March brings with it many Exhibitions and Open Nights arranged by Clubs and Branches. There is nothing to equal a display of this kind as a means of ending in a satisfactory way the activities of the two Winter Sessions, which are devoted more particularly to indoor pursuits.

A successful Exhibition gives the greatest delight to members of Clubs and Branches, as well as to those who come along to see what they have done. This is evident from the photograph reproduced on this page, which shows a corner of a display that delighted nearly 1,000 visitors to the Exhibition of the Belgrave Union (Leicester) M.C. towards the close of last year. Members were very happy as well as very busy when they were making preparations for the Exhibition, and the officials of the Club, who gave their time willingly to setting up the show and dismantling it, and also to its general organisation, were as happy and as delighted as the members themselves.

There was on view a fine array of Meccano models, including Club models and others built by individual members. The imagination of the model-builders was exercised to the full in providing suitable surroundings for the models they built, and also for the various Hornby and Hornby-Dublo Railways that were included in the display. For individual models there was a competition, the entries in which were judged by Mr. F. S. North, President of the Club, and it was difficult to make a selection, as all the models were of a high standard.

MERIT MEDALLIONS

With Exhibitions such as this as its outward expression, there has been a very gratifying increase in activity among Meccano Clubs during the past months. Further evidence of this is provided by the larger number of Merit Medallions earned during 1951 in comparison with other years since the war. The total number of awards was 40, and I hope to include the names of the winners of this distinction in next month's "*M.M.*"

I want all Leaders to make the best use possible of this award for the present Session by sending in their nominations as soon as possible. Two Merit Medallions are available in each Club for each Session, and I shall look forward to hearing reports of particularly good work carried out by those whom their Leaders have marked down as having deserved this distinction.

CLUB NOTES

CRYPT SCHOOL (GLOUCESTER) M.C.—A Competition with the subject "*Anything on Wheels*" attracted excellent entries, a model fire engine, a steam roller and a crane winning the principal prizes. A Visit to Swindon was a great success. Members who took part in it went round the Sheds and Works, where they saw many interesting operations in progress. Club roll: 25. *Secretary:* W. Jackson, 234, Stroud Road, Gloucester.

GREAVES METHODIST CHURCH M.C.—The Club's Exhibition was very successful indeed. There were three sections, a Hornby Railway Layout, a Display of Mobile Models and a collection of stationary Working Models. An illuminated flash sign built by the Secretary decorated the entrance. At other meetings models were built and Films were displayed. Club roll: 15. *Secretary:* Mr. M. Shaw, 79, Rutland Avenue, Scotforth, Lancaster.

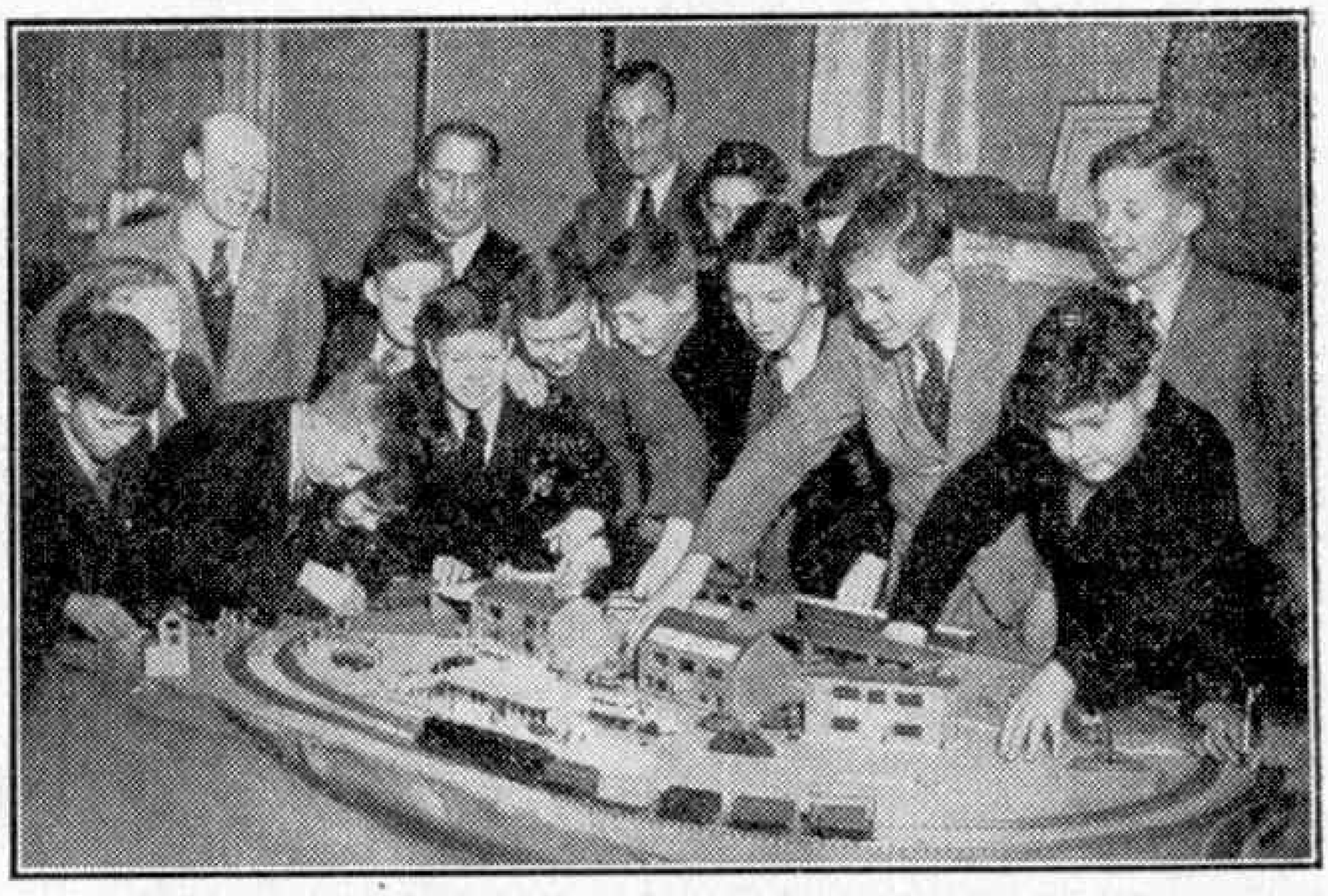
HOLLAND

MEMOKA (MONNIKENDAM) M.C.—Special cupboards have been designed and made for storing material and models in course of construction. These are so arranged that they can also be used as working tables. A demonstration of Club work was given in the neighbouring village of Broek. Club roll: 35. *Secretary:* Jan Paul van Diereu, Noordeinde, 12, Monnikendam.

BRANCH NEWS

NESSBANK (INVERNESS)—Good work continues, and attendance is improving. A special Hornby Train Display was arranged for the Church Jubilee Fair, and later layouts were operated at the Highland Hobbies' Exhibition. A Dinky Toys layout is being built. *Secretary:* Ian Hay, "Lea Rig," Drummond Crescent, Inverness.

REDLAND (BRISTOL)—Good progress is being made with the layout. The tunnel has been painted and covered. Sand laid on the baseboards and scenery is now being placed in position. A Model-Building Contest also has been held. *Secretary:* Mr. P. M. Cronin, 118 Redland Road, Redland, Bristol.



Happy officials and members of the Belgrave Union (Leicester) M.C., with a fine model village and Hornby-Dublo layout that was one of the attractions of the Club's last Exhibition. It was constructed by A. Taylor, who is third from the right in our photograph. At the back of the group is Mr. C. S. Smith, Leader and Secretary, and on his right are Mr. S. Cooper and Mr. W. George, Joint Leaders. Photograph by courtesy of the "Leicester Illustrated Chronicle."

HORNBY RAILWAY COMPANY

By the Secretary

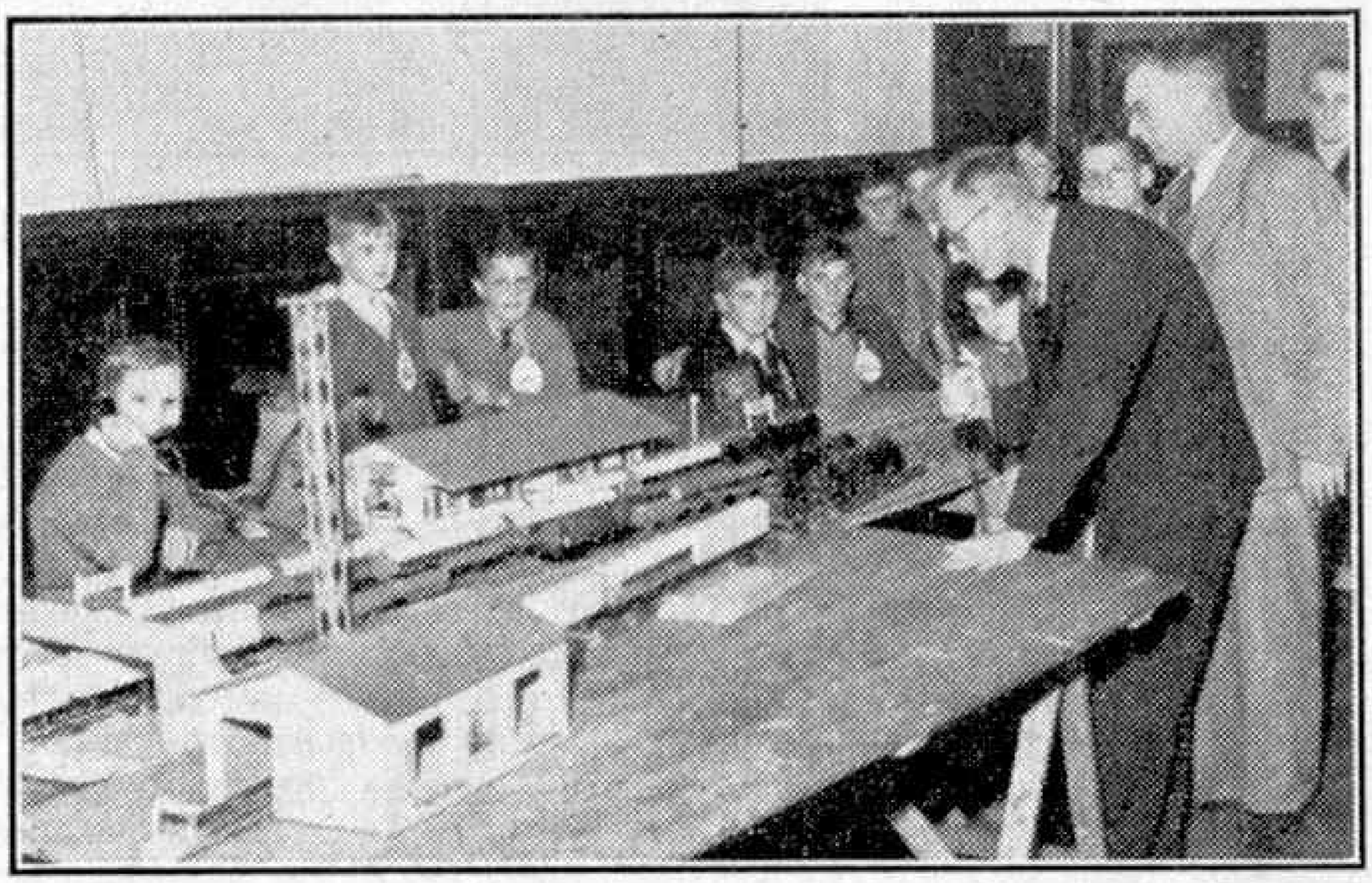
New Zealand Branch In Radio Programme

LIKE all Hornby and Hornby-Dublo enthusiasts, I know well the cheery noise that trains make when running round their tracks, and I can imagine no happier sound to all who love model railways and their working. I have always had to be in the same room as the layout to receive this noise, or at any rate within easy reach, but I have just learned of many listeners in New Zealand who heard the familiar sounds in their radio programmes on a special occasion last year.

This special occasion was a fine Exhibition organised by the officials and members of the Trinity (Invercargill) Branch of the H.R.C., the Chairman of which is Mr. S. W. Booth. A splendid layout with local associations was operated with great success throughout the Exhibition, after the first train on it had been started by Mr. J. K. Hanan, the member for Invercargill in the New Zealand House of Representatives, and later Uncle Clarrie of 4YX, the local broadcasting station, recorded a commentary on the operations that subsequently was broadcast in his special programme for children. In the course of this commentary several members of the Branch described various features of the line, and of the locomotives and rolling stock, and their voices, and the thrilling sound made by the trains in actual running, were heard clearly when the recording was broadcast.

The layout that achieved this distinction was a worthy one. It represented a real section of the New Zealand Railways, the track between Invercargill and Gore, on the line from the former to Dunedin. There was an intermediate station called "*Edendale*," and this was placed at the base of the U shape that the layout actually was given in construction. The full length of the main line was 106 ft.

There was realism in working as well as in construction. Each train carried the same serial number as its full size counterpart. Thus, there was a miniature Train No. 174, corresponding to the morning express northward to Dunedin and Christchurch that carries this number. It consisted of eight cars and a guard's van, hauled by a pre-war No. 3 Locomotive. Again, there was a goods train, with the correct number, representing No. 500, a real goods train that runs from Invercargill to Edendale only.



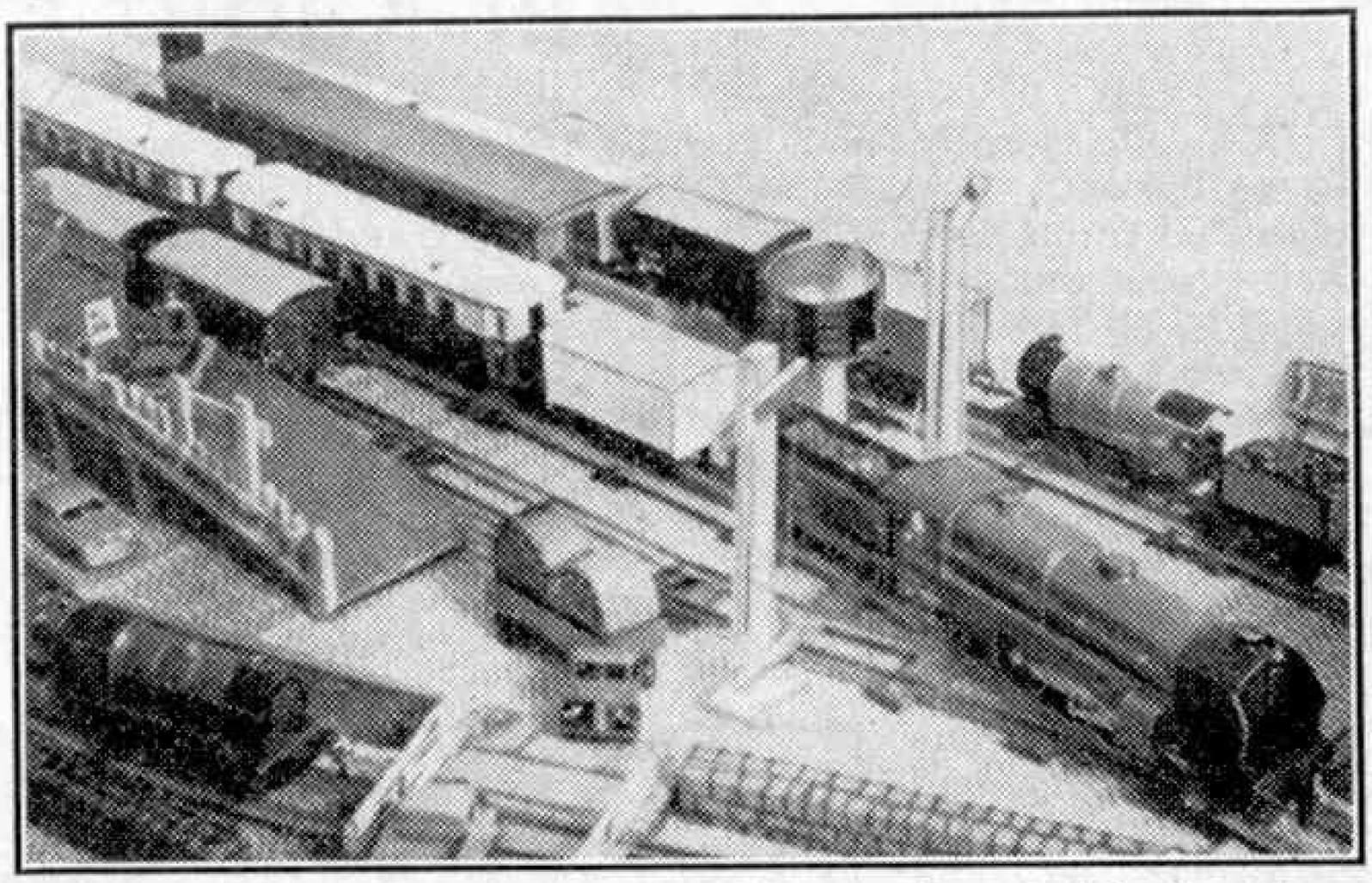
A big moment at the 1951 Exhibition of the Trinity (Invercargill) H.R.C. Branch No. 527. Uncle Clarrie of 4YX, the local broadcasting station, gives a running commentary on the Hornby Train operations in progress. Photograph by Hazledine's Studio Ltd., Invercargill.

As can well be imagined operations on this railway-like layout gave members great fun, which was enjoyed also by visitors to the Exhibition and by listeners to Uncle Clarrie's broadcast as well. Members entered on their separate tasks with great spirit, and to their solid work, and to the organising powers of Mr. Booth, Chairman of the Branch, the success of the display undoubtedly was due. To deal with the traffic there were in all three stationmasters, the same number of telephone operators, two signalmen, shunters and porters, with two inspectors of permanent way.

A Jointly-Owned East Coast Miniature

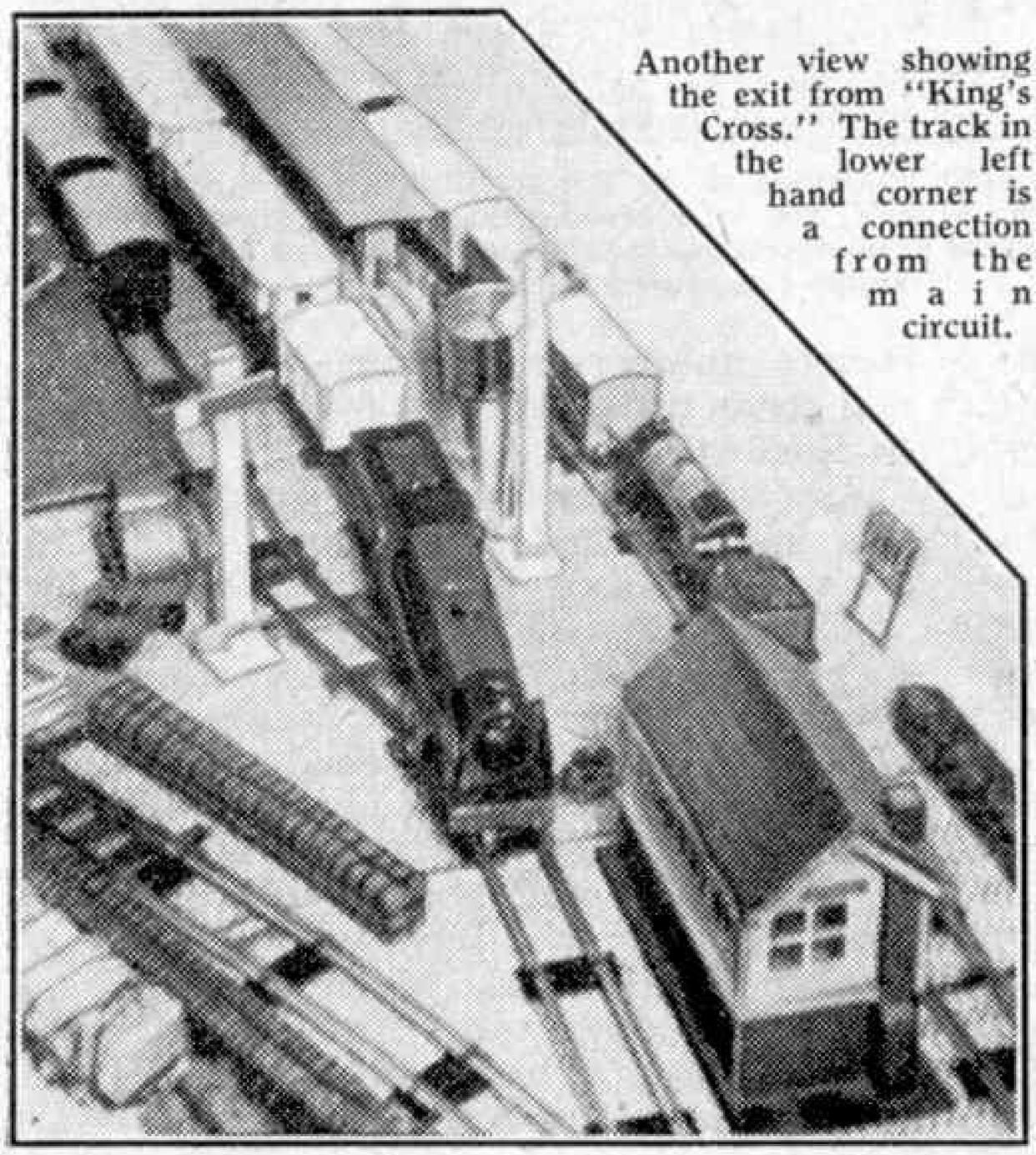
TWO H. R. C. members run the Hornby layout of which parts are shown in the pictures herewith. These young Hull railwaymen, Geoffrey Harvey and Barry Trotter, get plenty of fun from their railway, which is laid out from time to time, usually in a spare bedroom where it occupies a space of 10 ft. by 9 ft.

With a selection of Hornby clockwork equipment, some post-war and some of pre-war manufacture, the joint owners operate their railway system to represent the East Coast main line between King's Cross and Edinburgh, with two intermediate stations, "*York*" and "*Doncaster*." The main line is continuous, but the miniature "*King's Cross*" forms a terminal extension outside the main track. The station representing Edinburgh is partly through and partly terminal; "*York*" is on a loop line inside the main track, and "*Doncaster*" is an island site served by two tracks. There is at various points quite a choice of routes available.



A busy scene at "King's Cross" on the jointly-owned layout of Geoffrey Harvey and Barry Trotter, of Hull. An express is leaving the main departure platform for the North.

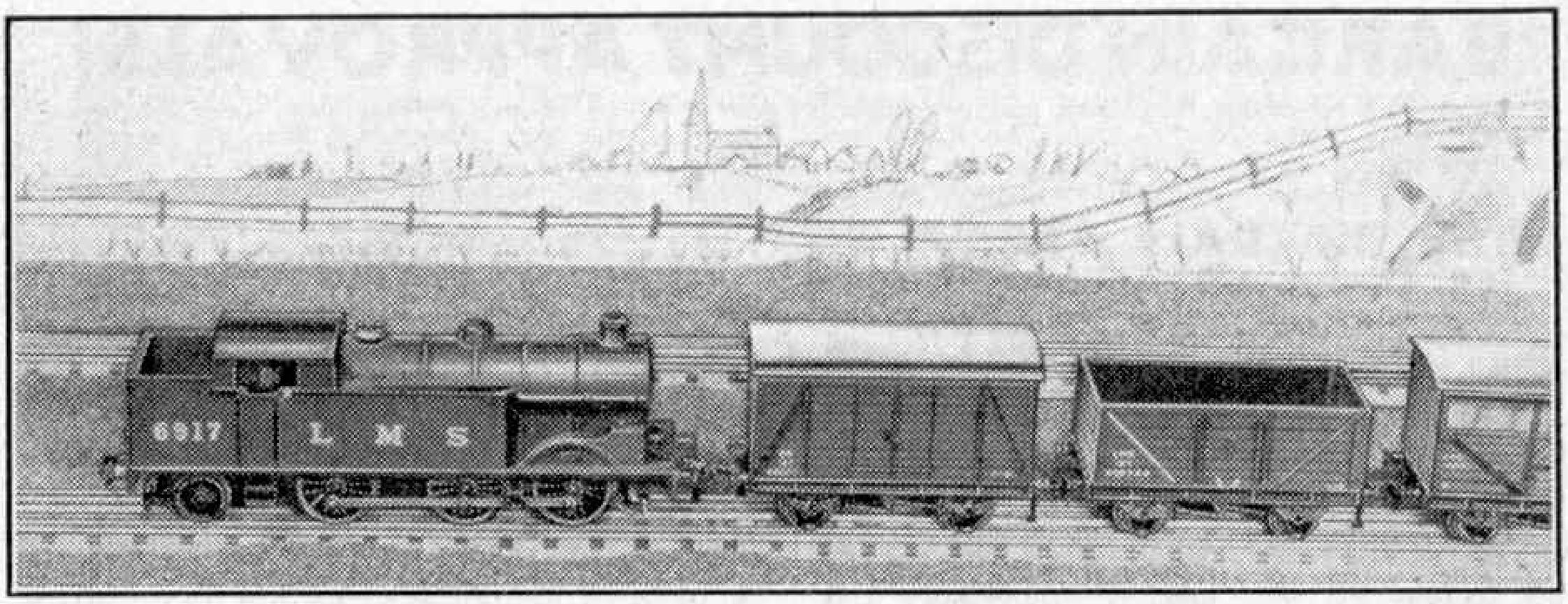
It will be seen that the track in general follows a familiar but favourite pattern. Naturally the owners of the line and their friends have to draw upon their imagination when working long "through" journeys, but after all imagination plays a great part in any miniature railway activity.



Another view showing the exit from "King's Cross." The track in the lower left hand corner is a connection from the main circuit.

So, on a typical journey from "*King's Cross*," where there are now three platforms, we may find the train made up of two bogies, two four-wheeled coaches and two vans in charge of a Hornby pre-war Clockwork 4–4–2. The train covers the main circuit three times before stopping at "*Doncaster*." Then another three circuits are put in to reach "*York*." Here there are extensive sidings encircled by the main line, and in the yard so formed there is plenty of activity. Cattle, cable drums, cases and many other items of freight are being loaded, and many of the larger Dinky Toys road vehicles add realism to the busy scene.

After "*York*," further circuits finally bring the train to "*Edinburgh*," where it is met by miniature station staff, whose equipment includes two Dinky Toys B.E.V. Electric Trucks.



Part of a Hornby-Dublo layout showing a simple scenic background. The countryside effects are drawn on paper attached to a board or wall behind the track.

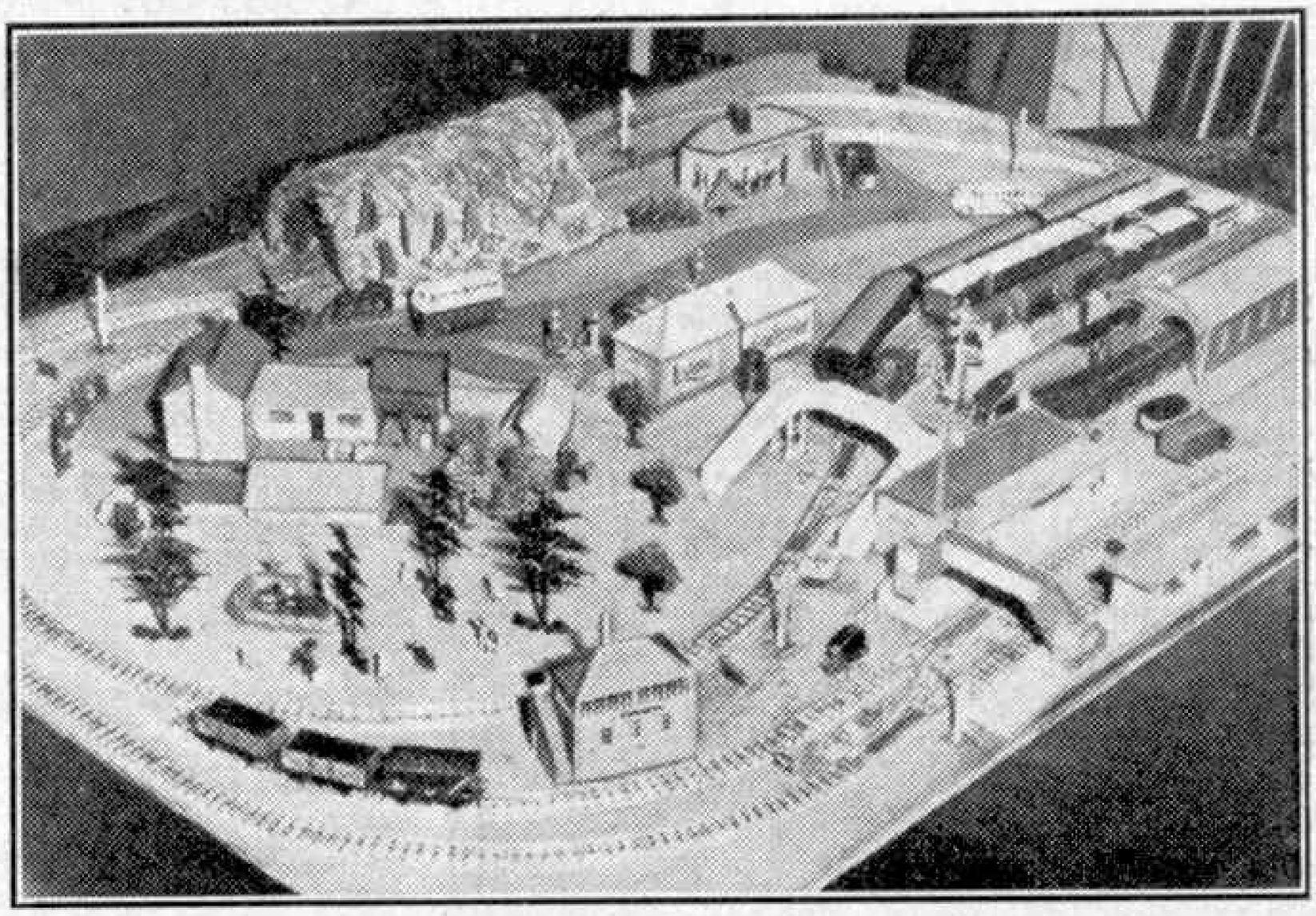
Simple Lineside Effects in Hornby-Dublo

THE two photographs on this page illustrate different approaches to the subject of lineside effects. Where a layout is permanent, and the track runs along a baseboard or shelves by the wall of the room, it is usually easy to provide a scenic background. At certain points the baseboard may be narrow and there will not be room for much more than a plain background strip. This is the situation in the upper picture.

Even simple field scenes, with distant trees and one or two buildings sketched on white or tinted paper, can have a very pleasing effect, and the necessary colours can be applied with chalks or water colours. If the miniature railway owner is not able to carry out the necessary drawing, he can usually find someone capable of doing this for him.

When the railway is on a baseboard or table that has to be approached from all four sides a background cannot often be used. Then lineside effects usually consist of actual buildings and other models placed near the railway. The lower picture shows a good example of this. Accessories such as the Hornby-Dublo Footbridge and Signal Cabin provide a good start, and quite frequently the miniature railway owner turns to cardboard modelling in order to provide houses, shops, a garage or other structures. Occasionally, too, it is possible to find in various toyshops items in the way of fencing and so on that can be adapted for miniature railway purposes.

If it is possible to use lineside models and a scenic background together, some splendid results can be obtained.



Lineside models without a background give a realistic appearance to the Hornby-Dublo layout of Mr. S. J. Doyle, Welwyn Garden City.

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For other Stamp Advertisements see also pages 138 and xvi.

Stamp Collectors' Corner

F. E. Metcalfe

LAS ISLAS MALVINAS

THE issue of a new set of stamps for the Falkland Islands, or Las Islas Malvinas, as the Argentines call them, is quite an event for collectors of colonial stamps, and also for one South American country, for reasons that will appear later in these notes.

The prices at which many Falkland Islands stamps sell is proof not only of their rarity, but also of their popularity. Few territories in the Commonwealth produce stamps that are more sought after, so if Argentina ever got its way, and obtained sovereignty over those far away Islands, British stamp collectors at any rate would be exceedingly sorry; but it is not likely that Great Britain will readily agree to the transfer.

To touch on the philatelic history of the Islands first, while postage stamps did not appear until 1878, postal franks—cancellations on pieces of white or coloured paper, in oblong or circular form, are what collectors generally place in their albums—appeared 10 years before that. These franks are scarce and are catalogued from 70/- to £8, though covers in good condition bearing one of them—there are a number of forgeries about—will bring more than the latter figure.

The first real postage stamps bore a head portrait of Queen Victoria, and their most notable characteristic is the beautiful shades that exist. There is a lot of talk nowadays about shade collecting, and it is true that K.G. VI collectors are very fond of shades, but in this they do not differ in the slightest from collectors of yesterday. Shades were always popular, and the writer cannot think of a more interesting or beautiful page of stamps than one with a fine selection of these Queen Victorian stamps of the Falkland Islands. Only recently he saw a wonderful lot, which had been gathered by a collector now well over 70. No modern collector of shades this one, for he had been keen on Falkland Island stamps for over 50 years.

In 1904 the head on the stamp was changed to that of King Edward VII, and while the design remained very similar, the stamps somehow are nothing like so beautiful. In 1912 we got another change of portrait. Now that of King George V appeared, and once more the design was very similar. In 1929, while the portrait was still of King George V, the design was completely changed and certainly not for the better. It was a really fussy little set, with a design showing a whale and a penguin below the head of the King. Technically the stamps were poor also, for many copies were badly off centre, and the perforation was rough.

Although the stamps are not handsome, they are certainly scarce, but collectors should make sure that they only pay good prices for perfect specimens; otherwise they will find them very difficult to dispose of should they ever wish to sell.

If the 1929 issue is scarce, it is relatively common compared with the handsome pictorial set that appeared in 1933. One or two expensive sets came out about this time, and as there was a slump at the time, or rather we were just starting to get over one, very few could afford a set with a face value alone of about £2, which is the reason why the set brings about £40 today. During the second World War the set cost over £50, and it is still considered one of the blue chips among modern colonial stamps. The next issue appeared in 1938, another pictorial set, and so popular has it been that there must be many thousands of sets up and down the world. But there is one country where it is not only unpopular, but envelopes bearing copies are deemed to be unfranked and recipients of letters must pay double postage, just as though those who sent the letters had forgotten to stamp them.

The country concerned is Argentina, which does not recognise our right to be in the Falklands at all. There are continual protests about our occupation, and not only have the Argentines set up at least one base in one of the dependent islands, but they have issued more than one stamp showing the disputed territory as part of Argentina.

The set of Falkland Islands stamps that appeared in 1933, and which now costs so much money, was issued to commemorate the centenary of British occupation. A century ago Argentina hadn't colonised her own territory on the mainland, let alone occupied those far away Islas Malvinas. The writer of these notes spent several years in Southern Argentina. There is still, in what we like to call Patagonia, a colony of Welsh people who emigrated there some 70 or 80 years ago, and found merely guanacos, foxes, pumas and those ineffable skunks. No Argentinos at all were there, and if it had not been for the succour these emigrants received from the country they had left they would indeed have perished; they had been told wonderful stories of a land flowing with milk and honey and wild strawberries, but they found one cursed with sterility, as Darwin described it. Of course it is all politics and a question of prestige.

And now we come to the new pictorial set. It will be a winner all right, but I think most will agree that it is not as fine a set as the one it has replaced. It is a costly set too, but values up to 1/- make a nice little page.

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For other Stamp Advertisements see also pages 136 and xvi.

Stamp Gossip

CRAYFISH ISLAND

HERE we have an illustration of one of the overprinted stamps of St. Helena that appeared on 1st January for use in Tristan da Cunha. This island is in the South Atlantic, 1,300 miles south-west of St. Helena, which is apparently the mother island.

Tristan da Cunha was named after its Portuguese discoverer. Great Britain has occupied it since 1817, though it was found as long ago as 1506. Its population is only about 200 or so, but with plans for a crayfish fishery, etc., maybe this will grow, but however you look at it, a set of postage stamps with a total face value of £1 can only have been prepared for one purpose. Once more stamp collectors are being called upon to foot the bill.

There is news that the set is to have a short life, for an entirely new one has been ordered. In these circumstances it will be as well to buy one's set without delay, though to start with, at any rate, there are likely to be plenty to go round.

This was not the case with a recent printing of the 2d. British Solomon Islands. This proved to be in a new perforation, and in one day the Crown Agent's stock was cleared out. Copies are being offered at as much as 12/6d., but don't pay anything like that price, for while the stamps may be good, they are not all that good.

HUNGARIAN FLOWERS

It is said that behind the "Iron Curtain" everyone is too occupied with mundane matters to bother much about art. Perhaps this is the case as far as some aspects of art are concerned, but it certainly does not apply to the designing of stamps, for countries like Hungary are producing some really magnificent efforts such as the flower set that recently appeared. One of these truly beautiful stamps is illustrated here, but you must see the stamps themselves to be able to appreciate the exquisite colouring.

A set costs about five shillings or so, and while collectors at home may not feel very attracted to the present regime in Hungary, apparently they simply cannot resist these flower sets. Small wonder. They really are wonderful, and make a glorious addition to a "Botanic" collection.

"UNCLE JOE"

When the stamp bearing Stalin's portrait is first looked at, one may be excused for thinking that a Russian stamp is concerned. Not a bit of it, unless we consider, probably rightly, that Poland is nothing more than an extension of Russian territory. Anyhow, Poland in company with the rest of Europe is turning out new stamps by the peck, and quite a nice collection they make too.

Stamps like the one illustrated will probably have historic value one day. And among so many different stamps a few may prove quite rare, as large quantities of all cannot be put away by speculators.

COMMEMORATING A DEFEAT

In these days of bigger and better battles, America's Battle of Brooklyn, which she commemorated on 10th December by the issue of a 3c. postage stamp, may seem a rather trivial affair to celebrate, particularly as the battle was a lost one. Nevertheless, while the battle itself was lost, Washington with his "Dunkirk" action was able to save his troops, or most of them, and thus they lived to fight another day. This is the reason why we get the commemorative stamp.

The name for the action was really the Battle of Long Island, and the stamp shows the retreat of the American troops on 29th August 1776, under the direction of Washington, two days after their defeat. The British advanced in the battle in three columns, and the main body got behind the American lines. The Americans attempted to break through the British lines, but many were taken prisoners, including their leader Sullivan. Washington decided upon retreat, and 9,000 of his troops got away across the river to safety, with their stores and ammunition.

MUSICAL STAMPS

A surprising number of collectors are interested in stamps with musical motifs. Many complain that far too few stamps are issued in honour of music. Now Italy has come along with something to help and the stamp shows a portrait of Verdi, flanked by an illustration of Milan Cathedral on the right and the Scala Opera House on the left, both famous buildings.

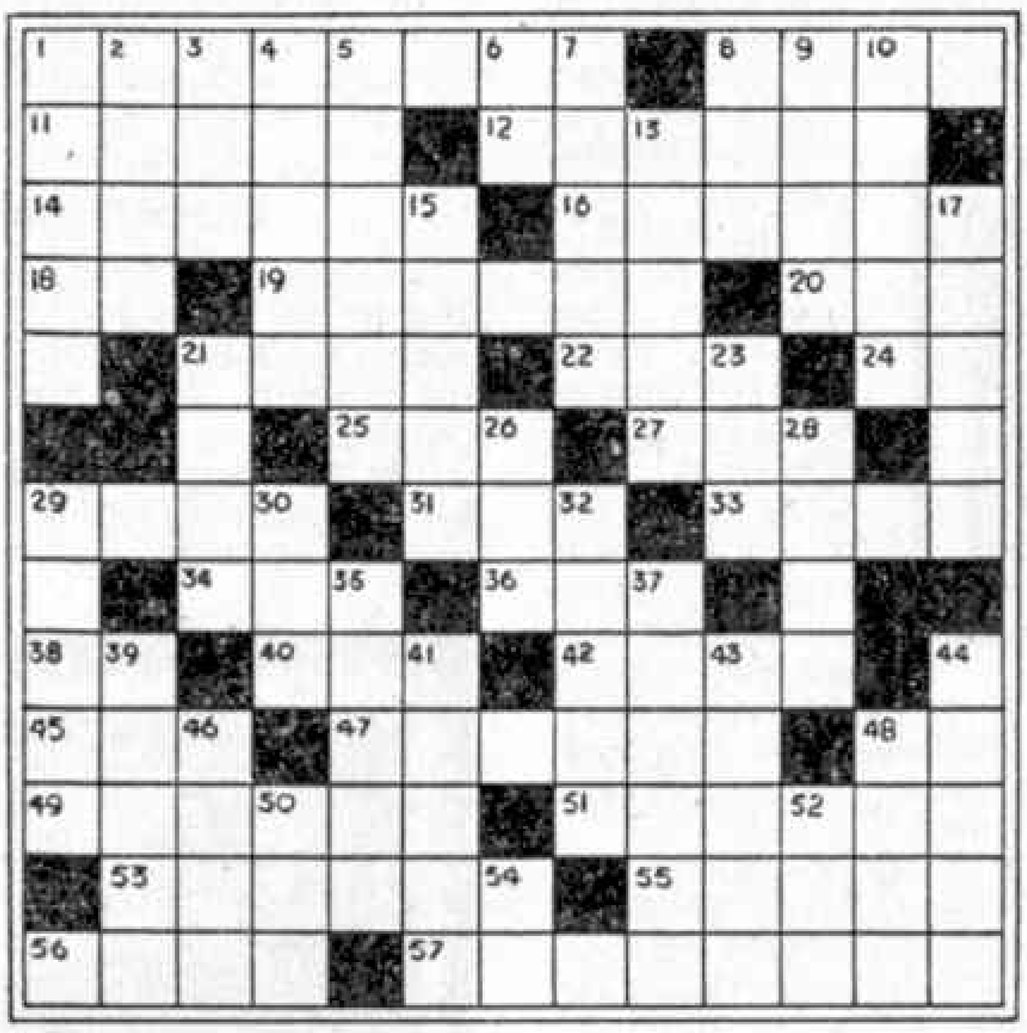
The inscription reads "50th anniversary of the death of Giuseppe Verdi." How proud Italy should be of such a man.

A thematic collection made up of "musical" stamps recently won an important prize in a large exhibition, and more than one collector was said to have offered to buy it at a good price. Perhaps collectors looking round for something new to collect might like to have a go at forming one on the same lines.

Competitions! Open To All Readers

Prize-winning entries in "M.M." competitions become the property of Meccano Ltd. Unsuccessful entries in photographic, drawing and similar contests will be returned if suitable stamped addressed envelopes or wrappers are enclosed with them.

An Interesting Crossword Puzzle



CLUES ACROSS

1. Your first Crossword?
8. To fill up
11. Musical composition
12. Not what it seems
14. First heat, then cool
16. Extremely small
18. Mother, much shrunken!
19. Amends made, all is well!
20. Listening device
21. A good pal
22. Cave
24. Behold!
25. Some ox, this!
27. Sharp knock
29. Sour apple
31. Permit
33. Large building
34. —— the boats!
36. Sign of assent
38. Myself
40. Nothing off this price
42. Extent
45. An entity
47. Kind of pear
48. Foreign Office (abb.)
49. Bore
51. More gloomy
53. An insolent fellow
55. Done by pairs
56. Shed tears
57. Lining of fine silk

CLUES DOWN

1. All smiles
2. Sicilian height
3. Weapon
4. Just perfect
5. Right way to do things
6. Unit of measurement
7. Covered with hoar frost
8. The kiss of the Sun
9. Fever
10. Not necessarily iron or brass
13. On horseback or cycle
15. Unwaveringly faithful
17. Eat away
21. He was the first
23. Snooze
26. To see at a distance
28. A size of printing type
29. Celestial body
30. Disallow
32. Amphibious creatures
35. Part of winding staircase
37. Fears
39. To accustom
41. Can be true or fiction
43. To put on
44. Reverse of the best
46. Shut sharply
48. A gala occasion
50. Egg of a small insect
52. Kind of pit
54. Sun-god

This month we present another of our popular crossword puzzles. There are no traps in the clues, or alternative solutions, and every word used, apart from names, can be found in a standard dictionary.

There are two sections in the competition, for Home and Overseas readers respectively, and in each prizes of 21/–, 15/– and 10/6 will be awarded for the best solutions. If necessary the judges will take neatness and novelty into consideration when making their decisions.

Entries should be addressed *"March Crossword, Meccano Magazine, Binns Road, Liverpool 13."* The closing date in the Home Section is 30th April, and in the Overseas Section, 31st July.

Aircraft in Hiding

Our second contest this month concerns aeroplanes. The names of 12 types of British or American aircraft have been hidden in the simple sentences below, and entrants are asked to find them.

1. I will invite them to come to the Club display.
2. It was exciting when Finnigan netted the ball.
3. His efficient valet takes care of everything.
4. He has promised to give me the cash tonight.
5. There will be another message to deliver, I know.
6. Study hard during your apprenticeship if you wish to succeed.
7. Every day Omar lingered at the airport, watching the machines.
8. Sighting the police car, he drove recklessly to escape.
9. I think that missionaries are courageous people.
10. Many congratulated her on her success.
11. Start collecting with a packetful of unsorted stamps.
12. The batsman dealt easily with every yorker that the bowler sent down.

Competitors are asked to identify the machines completely by giving in addition to the type, the nationality, maker's name and the duty or duties for which the machine concerned has been designed. Entries should be addressed to *"March Aircraft Competition, Meccano Magazine, Binns Road, Liverpool 13."*

There will be separate sections for Home and Overseas readers and in each of these prizes of 21/–, 15/– and 10/6 will be awarded, with consolation prizes for other efforts that just fail to attain prize-winning standard. Closing dates: Home Section, 30th April; Overseas, 31st July.

March Photographic Contest

The third of our 1952 series of photographic contests is a general one in which we invite readers to submit prints of any subject. Each competitor may submit only one photograph, which must have been taken by him, and on the back of his print must be stated exactly what the photograph represents.

The competition will be in two sections, A for readers aged 16 and over, and B for those under 16. Each competitor must state in which section his photograph is entered. There will be separate overseas sections, and in each section prizes of 21/–, 15/– and 10/6 will be awarded. Entries should be addressed *"March Photographic Contest, Meccano Magazine, Binns Road, Liverpool 13."* The closing date in the Home Section is 31st March, and in the Overseas Section, 30th June.

Competitors who desire their entries to be returned should read carefully the paragraph at the top of this page.

Competition Results

SEPTEMBER 1951 WORD BUILDING CONTEST

1st Prize: C. C. O. Young, Bedford. 2nd Prize: M. Allan, Forres. 3rd Prize: A. Hocking, Exeter. Consolation Prizes: Miss J. T. Parkhill, Rothesay; G. W. Candy, Birmingham 9; R. R. Burnett, Dunfermline.

SEPTEMBER 1951 TRACK CONTEST

1st Prize: E. Mickleburgh, Rugby. 2nd Prize: B. J. Holden, Burgess Hill. 3rd Prize: H. J. Birmingham, East Kirkby. Consolation Prizes: D. Dickinson, Calderbridge; B. E Timmins, Birmingham 24; K. F. Jennings, Cambridge.

OCTOBER 1951 PHOTOGRAPHIC CONTEST

1st Prize, Section A: D. J. Sims, London W.13; Section B: B. Wheeler, Petersfield. 2nd Prize, Section A: B. M. Laeser, Birmingham 20; Section B: Miss N. E. Williams, Norwich. 3rd Prize, Section A: J. Futers, Willington; Section B: E. Wilson, Pudsey. Consolation Prizes, Section A: C. E. Wrayford, Newton Abbot; R. J. Sowersby, Urmston: D. Randall, Crewe. Section B: A. Peters, Bristol 6; D. F. Clark, Southsea; C. M. Chesters, Nottingham; P. Abigail, Greenford.

OCTOBER 1951 FESTIVAL DRAWING CONTEST

1st Prize Section A: R. J. Sowersby, Urmston; Section B: J. Brett, Liverpool 21. 2nd Prize, Section A: M. Jamieson, Liverpool 7; Section B: A. Stroud, Silchester. 3rd Prize, Section A: W. M. Alexander, Middlesbrough; Section B: G. Stringer, Worcester Park. Consolation Prizes, Section A: T. A. Gould, Leek; A. Mayor, Kendal; J. B. Bellis, Manchester. Section B: W. Jackson, Gloucester; S. L. Birch, Birmingham; P. P. Lyons, Nottingham.

OCTOBER 1951 TUNNELS CONTEST

1st Prize: G. Watkinson, Chester. 2nd Prize: A. J. Butterfield, Cuffley. 3rd Prize: W. G. Reeves, Cambridge. Consolation Prizes: W. M. Robinson, Stockton; J. J. Bate, Llangollen; N. E. Burke, Wigan.

NOVEMBER 1951 PHOTOGRAPHIC CONTEST

1st Prize, Section A: I. F. Hudson, London S.W.16; Section B: D. C. Mills, Caernarvon. 2nd Prize, Section A: S. Redhead, Hull; Section B: J. Whinnerah, Carnforth. 3rd Prize, Section A: A. R. Brown, Isleworth; Section B: P. G. Chatham, Kendal. Consolation Prizes, Section A: J. C. Pearson, Mansfield; J. B. Groucott, Rugby; M. J. Burnley, Keswick; Section B: M. G. Ross, Leeds 5; M. B. Arnold, Potters Bar; D. Burroughs, Lowestoft.

OVERSEAS

JUNE 1951 NOVEL DRAWING CONTEST

1st Prize, Section A: J. W. Belderson, Maseru, Basutoland; Section B: A. E. Russouw, Pietermaritzburg, S. Africa. 2nd Prize, Section A: S. M. Gregory, E. London, S. Africa; Section B: Miss T. Rajeswari, Vellore, S. India. 3rd Prize, Section A: K. Jones, Grenada, B.W.I.; Section B: N. S. Dawson, Petone, N.Z. Consolation Prizes: A. C. Ramsden, Masterton, N.Z.; R. Spence, Paris, France; J. Williams, Calcutta, India; A. E. Kelly, Ottawa, Canada.

JUNE 1951 LOCOMOTIVE CONTEST

1st Prize: G. E. Boyle, Bombay, India. 2nd Prize: B. Mitcham, Portland, Canada. 3rd Prize: D. J. Large, Rockhampton, Australia. Consolation Prizes: I. Johnston, M.E.A.F. 10; N. W. Banks, Dublin, Irish Republic; J. J. Taylor, Riverton, N.Z.

JULY 1951 PHOTOGRAPHIC CONTEST

1st Prize, Section A: J. B. Fairhurst, Berne, Switzerland; Section B: M. S. Casey, Melbourne, Australia. 2nd Prize, Section A: F. N. Gardner, Jinja, B.E.A.; Section B: H. E. Reed, Lyons, France. 3rd Prize, Section A: P. Neild, Puri, India; Section B: G. Schwegmann, Rondebosch, S. Africa. Consolation Prizes: I. Phillips, Salisbury, S. Rhodesia; D. Dex, Bulawayo, S. Rhodesia; J. St. A. Davies, Nairobi, Kenya; N. D. Brown, Salta, Argentina.

JULY 1951 COMMERCIAL VEHICLES CONTEST

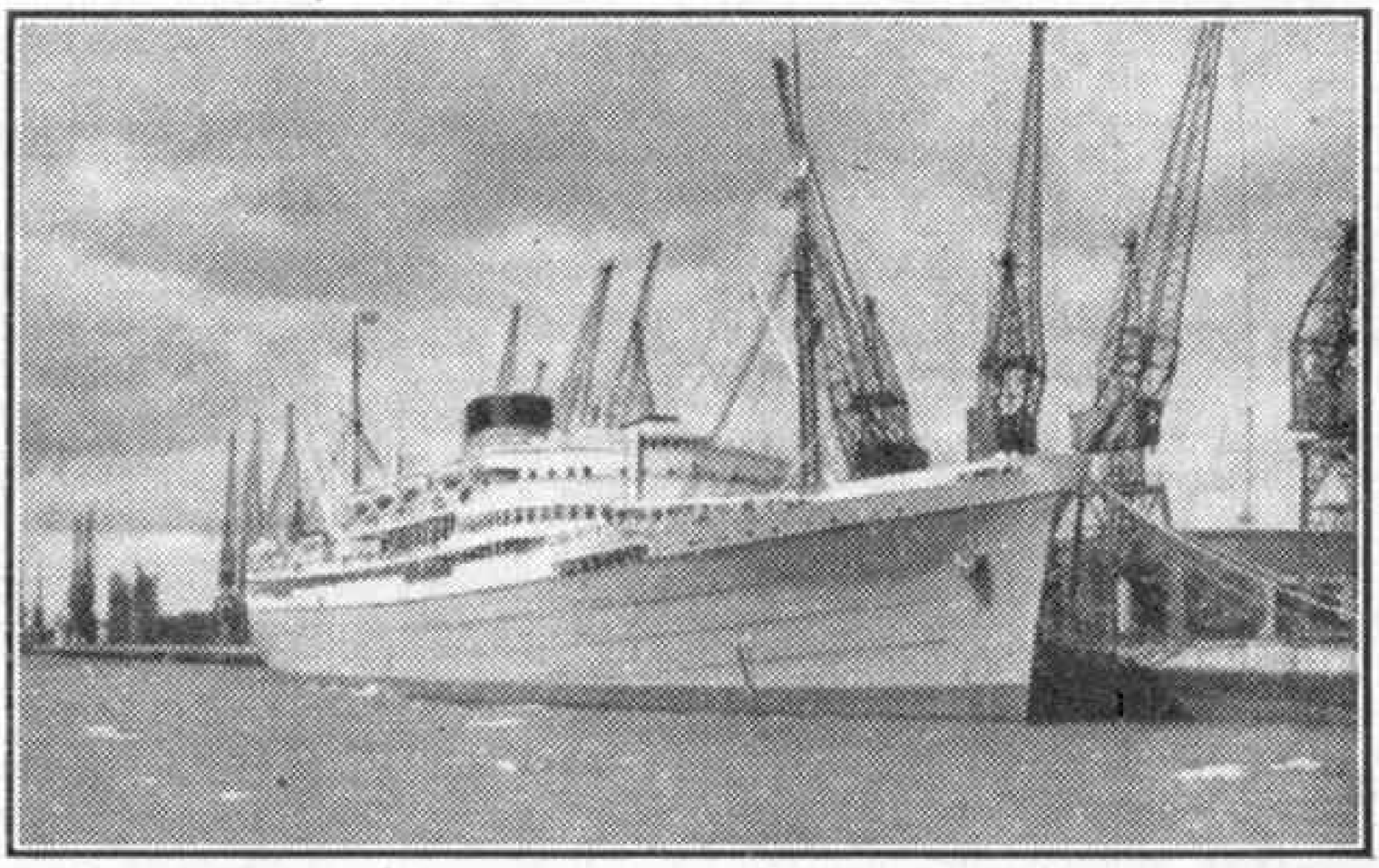
1st Prize: J. R. Bamford, Sarawak, Borneo. 2nd Prize: R. T. Thomson, Gibraltar. 3rd Prize: L. Perry, Pennsylvania, U.S.A. Consolation Prizes: I. J. Robb, Rondebosch, S. Africa; J. M. Holmes, Nairobi, Kenya; S. Taylor, Kandy, Ceylon; T. A. Sherrington, Freetown, W. Africa; J. K. McKenzie, Bombay, India.

JULY 1951 LOCOMOTIVE CONTEST

1st Prize: B. Baker, Madras, India. 2nd Prize: C. O. Saul, Alexandria, Egypt. 3rd Prize: E. T. Saperia, Little Rock, U.S.A. Consolation Prizes: B. C. Jones, Hawke's Bay, N.Z. S. Bimpson, Southampton, Bermuda; L. A. O. Pemberton, Colombo, Ceylon; J. A. Whitefield, Port Elizabeth, S. Africa.

AUGUST 1951 PHOTOGRAPHIC CONTEST

1st Prize, Section A: P. M. Moncaster, Perth, Australia; Section B: B. Ferguson, Madrid, Spain. 2nd Prize, Section A: H. Arnold, Dublin, Irish Republic; Section B: V. H. Calligan, Hong Kong. 3rd Prize, Section A: W. G. Rattray, Cork, Irish Republic; Section B: F. M. Calshaw, Hanover, Germany. Consolation Prizes: A. J. Watton, Dublin, Irish Republic; A. C. Pim, Mount Mellick, Irish Republic; O. Rudden, Dublin, Irish Republic; G. Hanson, Kenya, B.E.A.; D. J. Parry, Montreal, Canada; H. A. Humphrey, Durban, S. Africa.



A fine photograph of the Union-Castle liner "Stirling Castle," submitted by D. C. Mills, Caernarvon. It was awarded 1st Prize in Section B of the November 1951 Photographic Contest.

Making Clean Sweeps—(*Continued from page 101*)

cleanliness are shown in the lower illustration on page 101. They sprinkle water on the ground, which keeps down dust more efficiently than the wet tea leaves scattered in Victorian times on carpets before they were swept—with stiff dust-raising implements! Then they have rotary brushes that sweep the road surface and collect the sweepings at the same time. These are thrown into a spiral which feeds an elevator belt used to convey the dirt to the enclosed tipping body.

One of the two machines illustrated is a special narrow width sweeper known as the Lewin Mechanical Orderly, in which high pressure water jets immediately behind the sweeping brushes keep the bristles damp, laying the dust and generally make the sweeping more efficient.

Mechanical sweeping has invaded factories, warehouses and railway station platforms. The illustration at the head of page 101 shows a type of brush designed for this purpose, which can be driven either by a petrol engine, or by a battery and an electric motor. The dirt is swept into a container at the front, which can easily be tipped for emptying the refuse.

Fighter Family—

(*Continued from page 110*)

were shown the remaining P.1052 prototype, VX 272, now fitted with an arrester hook and naval equipment as a possible successor to the "Sea Hawk," and the original P.1040 prototype, now redesignated P.1072 and complete with a 2,000 lb. thrust "Snarler" rocket motor to supplement the thrust of its "Nene."

That is as far as the story of the new Hawker family of jet fighters can be taken at the moment. There is no doubt, however, that in Sydney Camm's fighters, Rolls-Royce's engines and the fighter pilots of the Royal Air Force and Royal Navy Britain has a "first eleven" second to none in the world, and one that will go on improving every year.

A Uranium Air Lift—(*Continued from page 121*)

The barges operate in trains of 12, pushed, not pulled, by a power-boat. "Have more control over 'em when you push 'em," says the man with the ham-sized hands. On the way northward they carry supplies for the fur-trading, mining, meteorological and missionary outposts, and Indian camps strung out along the banks of the rivers. On the return journey they are heavily-laden with uranium concentrate, crushed ore.

"It would greatly simplify matters if we could refine the ore at Eldorado," I was told. "But it takes about four tons of chemicals to refine one ton of concentrate and it would be quite impracticable to get the chemicals up to Eldorado without a road or railway. To build either a road or a railway across the barrens to Great Bear Lake would be a colossal job. And who's to say that the Eldorado Mine won't run dry, or that we won't find supplies of uranium in some more accessible spot?"

This latter is just what has happened. An ore field has been discovered in Saskatchewan, but it will take time to broach this new source of supply. Meanwhile, air freighters have spent the last winter roaring through the strangely opaque Arctic skies on the Airlift to a Uranium Eldorado.

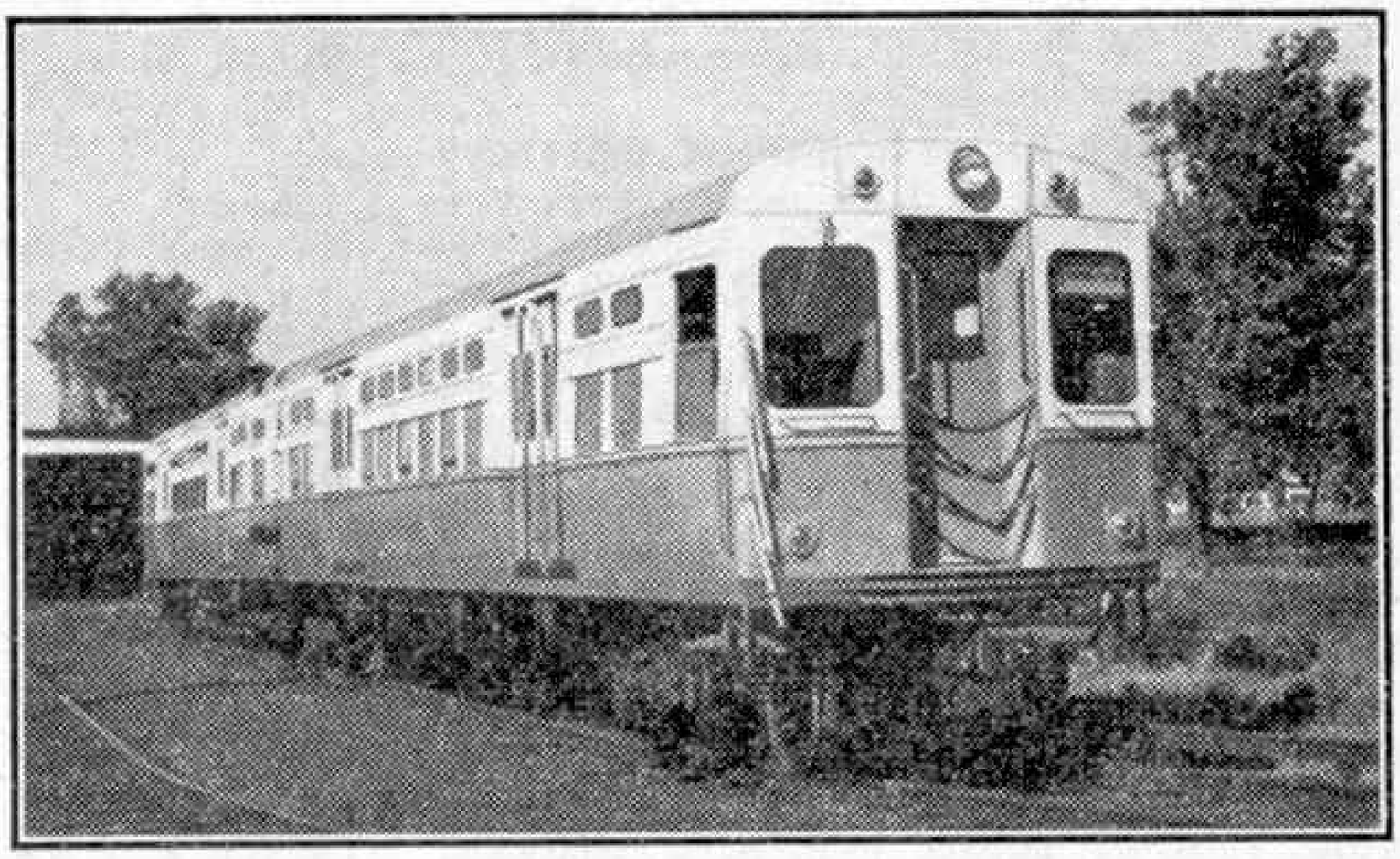
For this article and the illustrations reproduced on pages 120-1 we are indebted to Polar Photos, London.

The Spritsail Barge Races—(*Cont. from page 104*)

barges in condition for racing had been fitted with engines, while the decline in numbers is shown by the fact that the Associated Portland Cement Manufacturers had not a single sailing barge left; fifteen years before they had nearly two hundred. Enthusiastic members of the Thames Barge Sailing Club alone had converted eighteen good barges into yachts, while many others had become house-boats. That made it impossible to race them for prizes under the Dodd Trust, which could only be used for its original purpose.

Nevertheless, in 1949 the Marina Club staged a Medway Barge Match that was really a yachting event, all the twelve barges taking part having been converted and manned by amateurs. Only one managed to weather the turning mark and complete the course. Next year the race was held again on the Medway with both yachts and commercial barges; in 1951 it was again confined to barge yachts, no professional barge skippers being allowed at the helm.

The prospects of reviving races in the old way appear to be non-existent, but the riverside folk still talk of great deeds in the past and the races certainly fulfilled Dodd's original purpose while they provided a grand sport.



The Chicago Transit Authority have recently introduced cars of the type shown above for use on their subway system. They have upper windows through which standing passengers can see out without bending down or lowering their heads. Photograph by C. E. Keevil, Chicago.

Among the Model-Builders—

(*Continued from page 127*)

our model-building department some years ago, but as it was intended for display purposes only, no constructional details of it were prepared for publication. It is therefore most interesting to learn that Mr. K. van de Laar of Rotterdam has succeeded in building a very fine copy of this model without any other assistance than the external details he was able to obtain from the illustration on the cover of the Instructions Book.

Mr. van de Laar's model is shown in the lower illustration on page 127, and I am sure that readers will join with me in congratulating him on a very fine achievement. The internal details of the model and the operating mechanism were designed entirely by Mr. van de Laar himself. He used two E20R type Motors for operating the various movements, all of which are centrally controlled from the operator's cabin at the rear of the boom.

The model created great interest in Rotterdam and Amsterdam, where it was exhibited in two of the main stores for several weeks, and was demonstrated daily by Mr. van de Laar.

Fireside Fun

Shopper: "I see you have a lot of trombones and pistols in your window. Surely nobody buys those."

Pawnbroker: "Of course they do. A fellow buys a trombone, and then some of his neighbours come in for pistols."

* * *

"Shoot, Joe! Shoot."
"Why pick on Joe? Shoot the lot."

* * * *

"Yes, he was expelled for cheating in the anatomy exam. He was caught counting his own ribs."

* * * *

"Bill's sister fell in a well."

"Didn't he pull her out?"

"He couldn't be a brother and assist her too, could he?"

* * * *

"Grandfather says that when he was a boy he didn't do the things we do now."

"That's nothing. Grandfather doesn't do the things now that grandfathers did when he was a boy."

* * * *

"Hey, you. What's your name?"

"Size Seven Smith, sir."

"You trying to be funny?"

"No, sir. That's my real name. When I was born my folks didn't know what to call me, so dad wrote some names down, put them in his hat and shook 'em up. Then dad pulled one out—it read Size Seven."

* * * *

"You mustn't play with that hammer. You'll hurt your fingers."

"Oh, no, I won't, Mum. Willie's going to hold the nails."

BRAIN TEASERS

PLANT EVERYBODY KNOWS

In the seven-letter name of a certain plant, letters 1 and 2 give a preposition, 3, 2, 7 and 1 denote something that can be worn, 5, 4, and 3 form the name of something that can be driven, and 6 and 7 indicate a partnership. What is the plant? S.W.C.

* * * *

YOU NEED NOT PAY IT

A reader inspired by a curious puzzle included in the "*M.M.*" for June of last year has sent in the following effort:

			£	s.	d.
T	1 2 3 4 5 6	@ V/S	N	E	S
E	1 2 7 4 8 9 0 6	@ O/A		NN	D
P	8 4 1 6	@ D/P		L	E
			O	D	ND

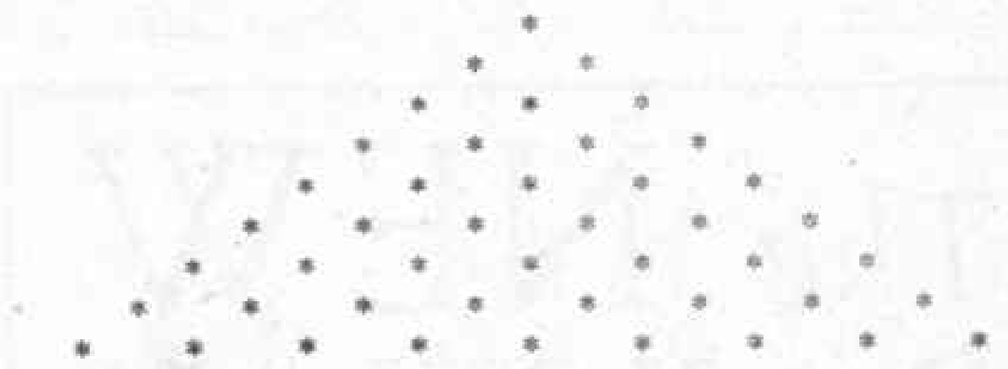
This is a strange rendering of a bill for certain quantities of each of three different articles, formed by changing letters into numbers and numbers into letters.

Can you restore the bill to its original condition? J.B.

* * * *

START WITH YOURSELF

Another reader has written to tell me that the "Warning" in the second puzzle in the January "Brain Teasers" was not sufficiently frightening! Apparently he had no difficulty in constructing the word pyramid about which the warning was given, and he has submitted a more difficult one, with nine words instead of six.



The new pyramid is seen in the accompanying figure; in the solution each asterisk is replaced by a letter, and here are the nine clues, beginning at the top: Myself; Something; Is Worn; Ceremony; Bury; Keep; Sure; Return Pressure; and Burn. A.R.S.D.

* * * *

SOLUTIONS TO LAST MONTH'S PUZZLES

The diagram gives a partial solution to the first puzzle in last month's "*M.M.*" This shows six words, with two letters of the one to fill line 5, which is left incomplete, as this issue goes to press before the time limit fixed for the receipt of readers' suggestions. For the best of these a prize of 2/6 will be awarded by the Editor.

T	O	U	R	I	S	T
F	R	E	I	G	H	T
B	R	U	T	I	S	H
R	A	I	M	E	N	T
		B		P		
C	L	E	A	N	E	R
E	N	T	R	E	A	T

Here is the sentence of the second puzzle, reprinted with the proverb asked for indicated by capital letters: "When at lA ST IT CHased some of the boys INto a narrow streeT I MEt it with a pitchfork in the hope that I could SAVE Some of them wheN IN Extremity, but the worst happened.

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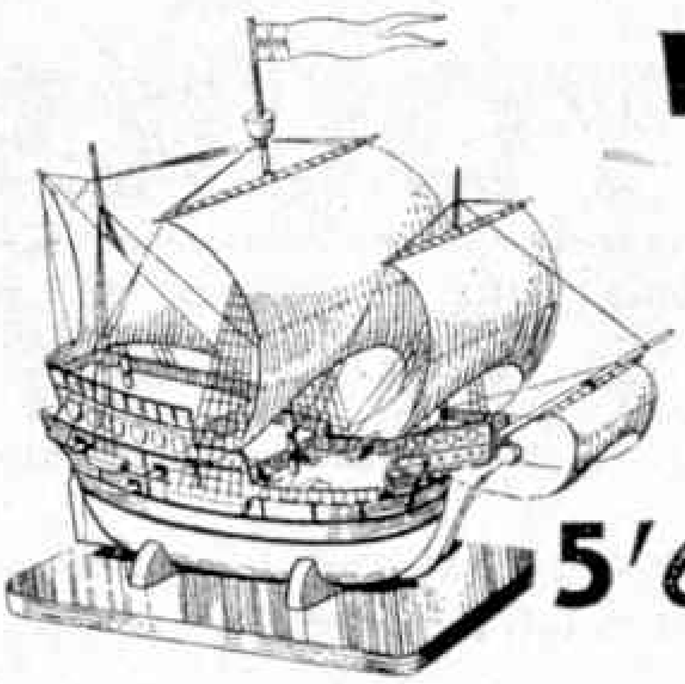

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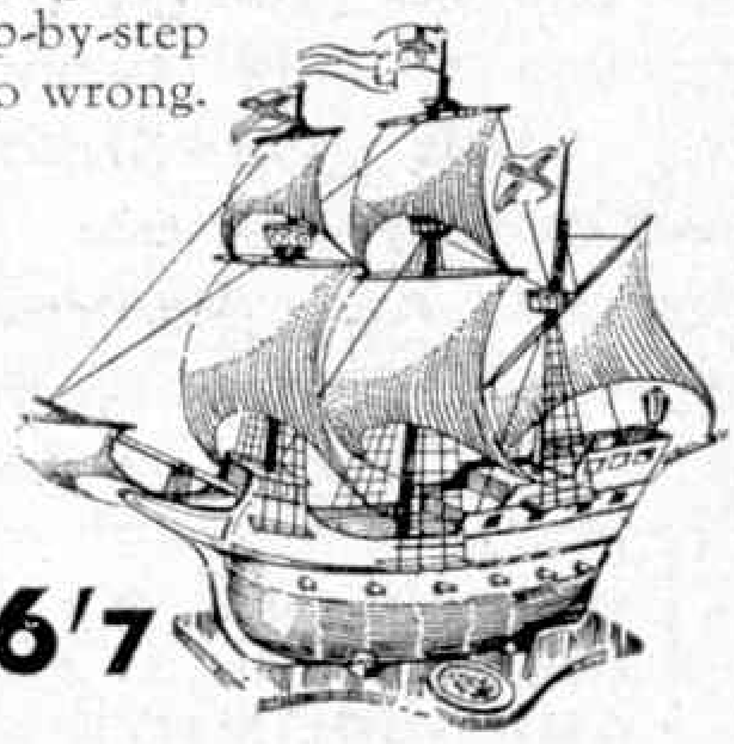

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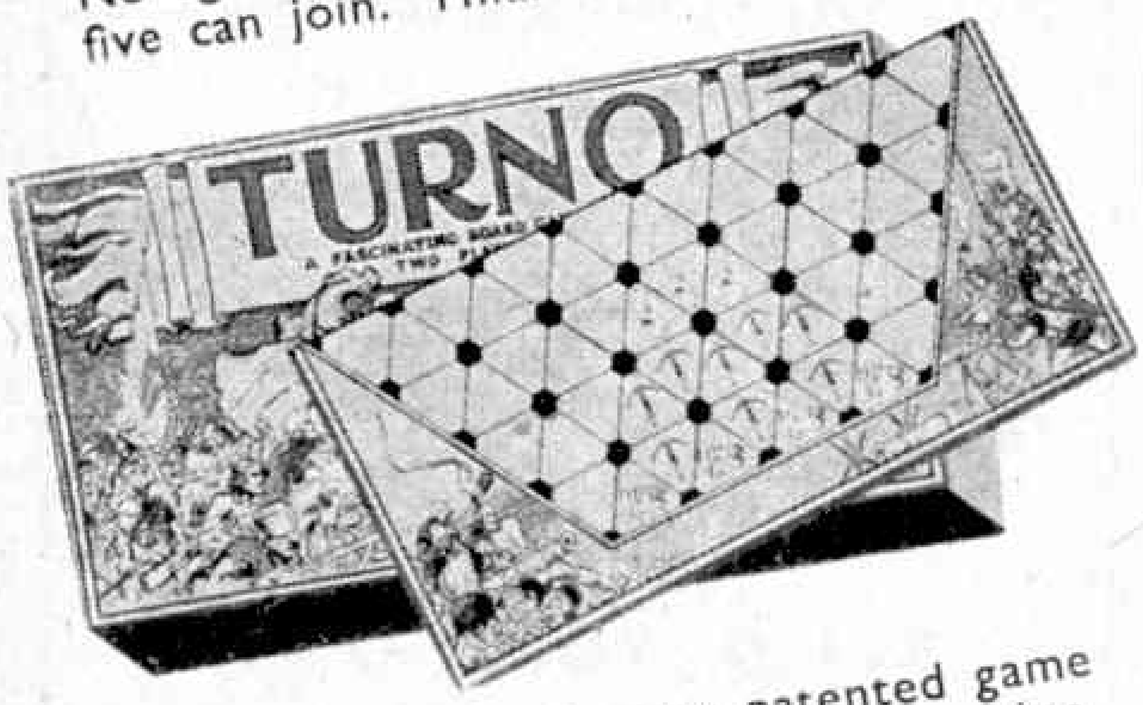

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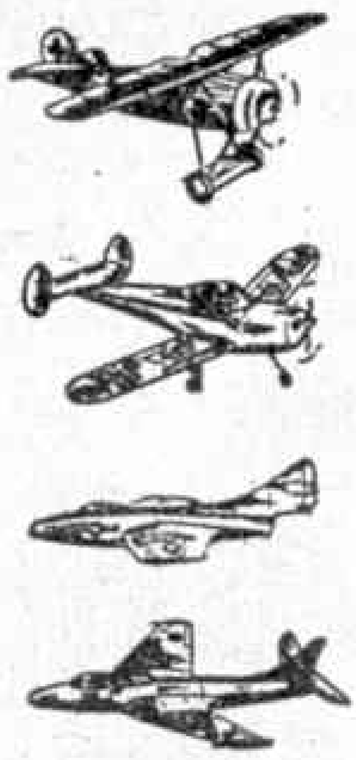

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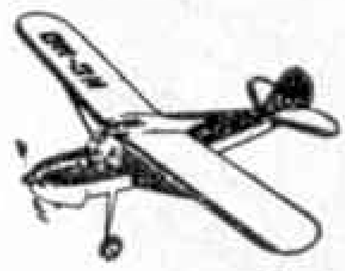

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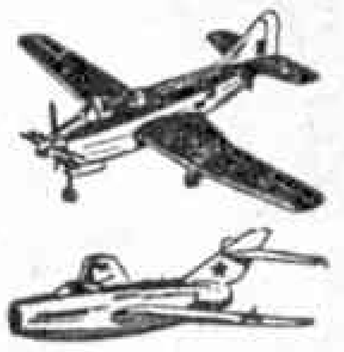

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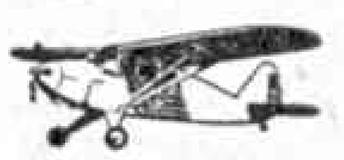

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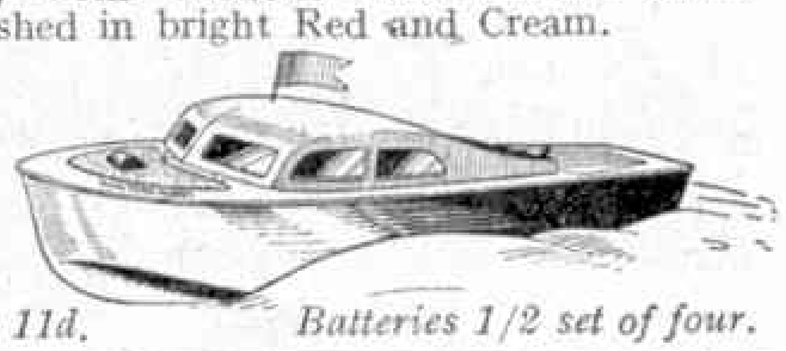

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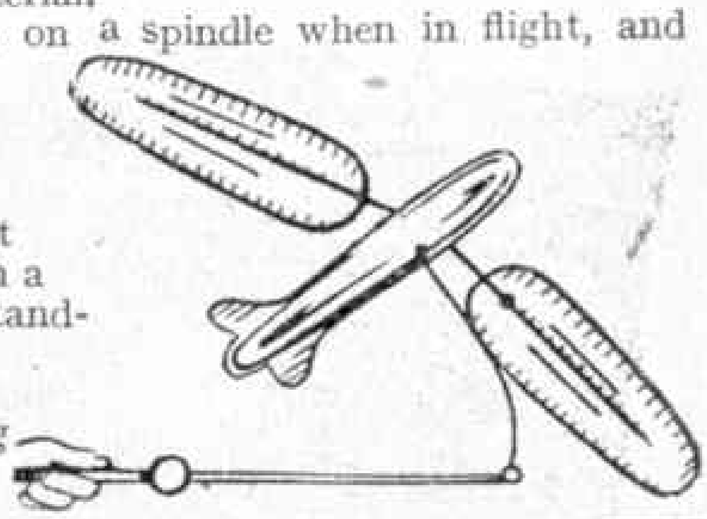

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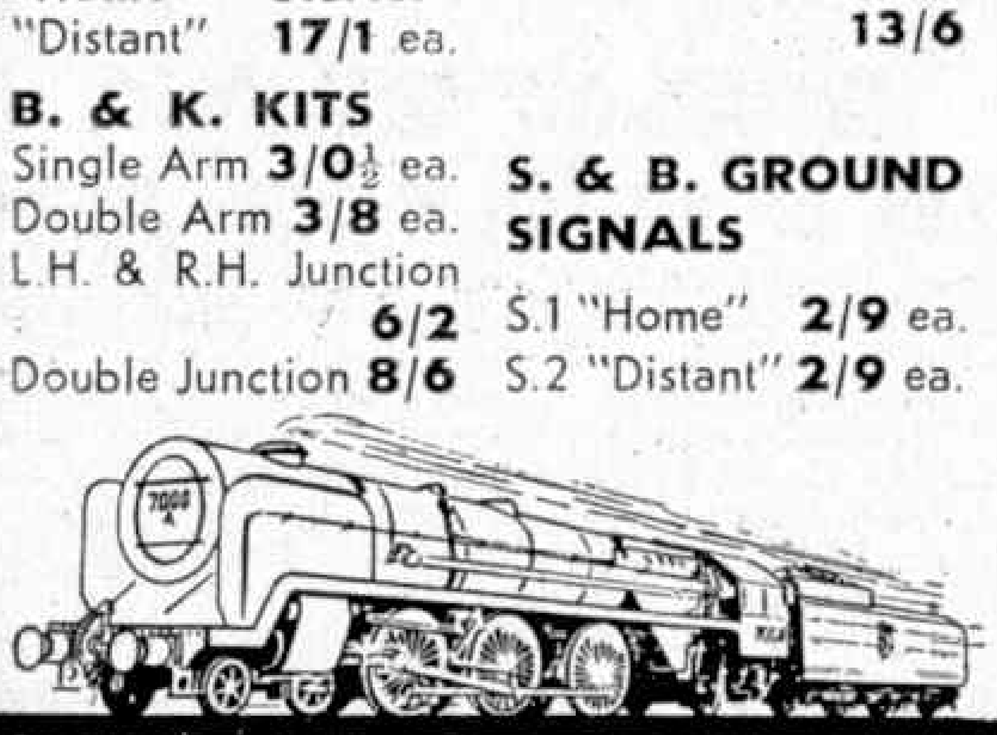

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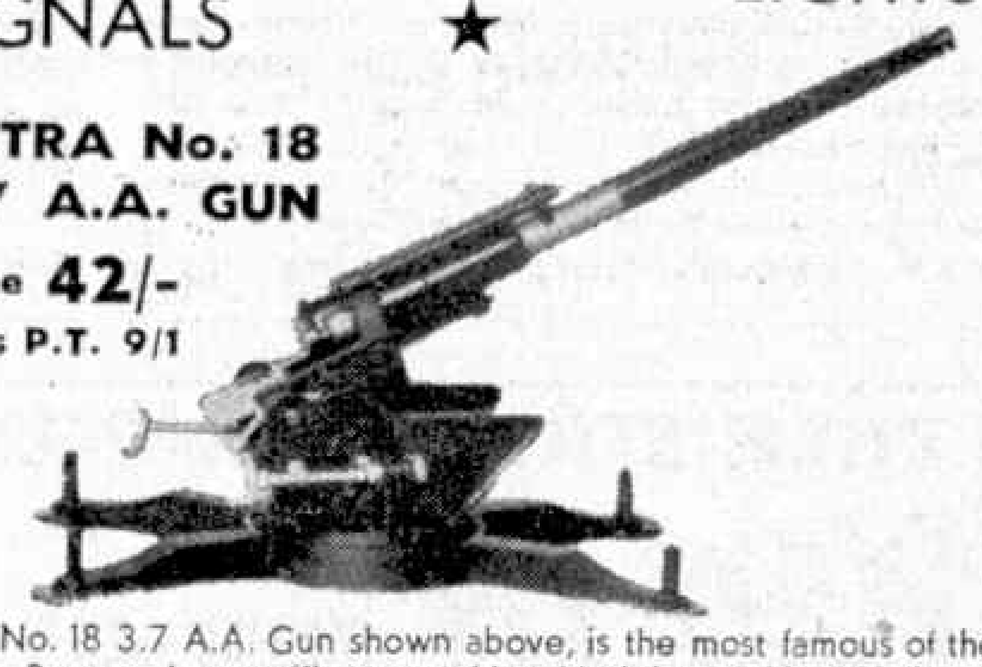

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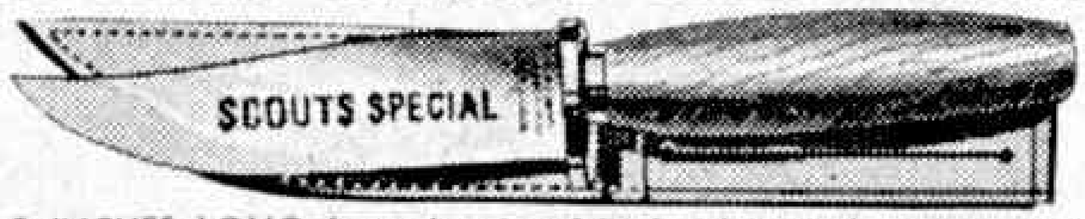

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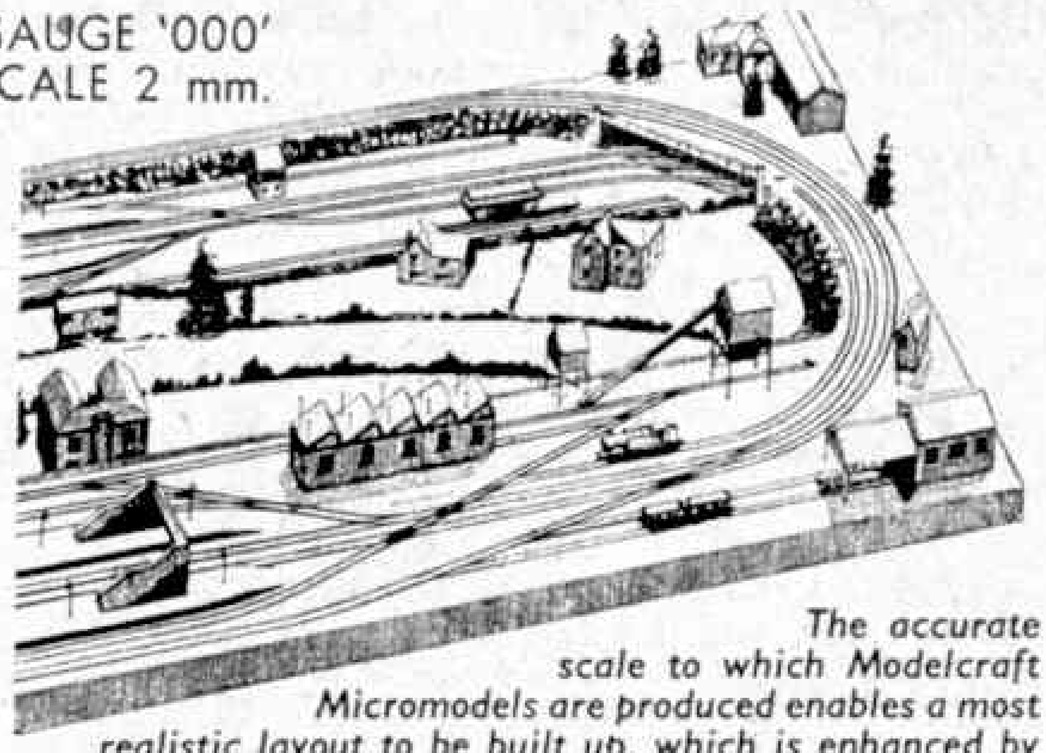

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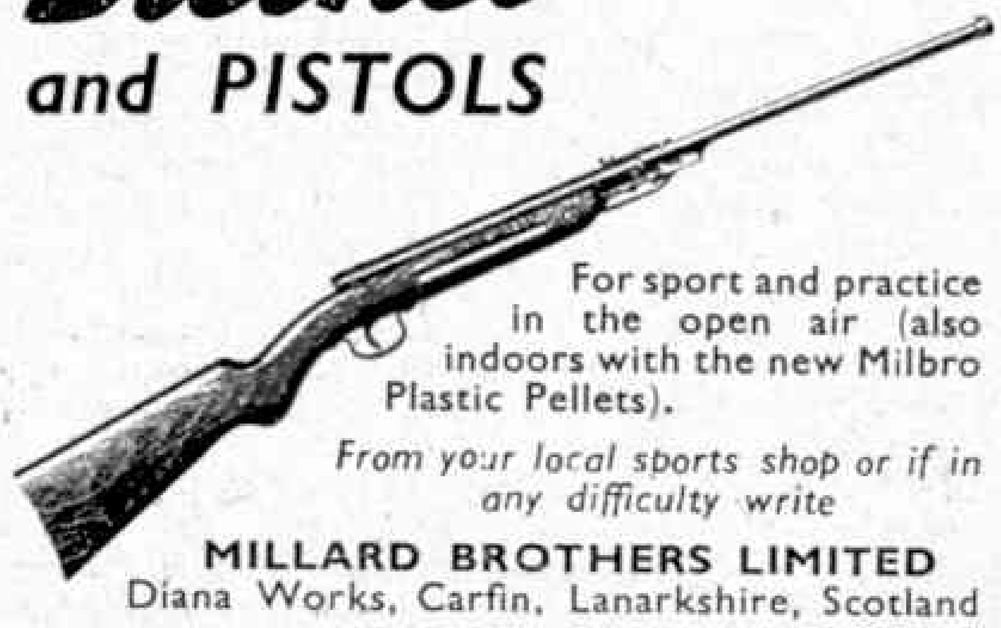

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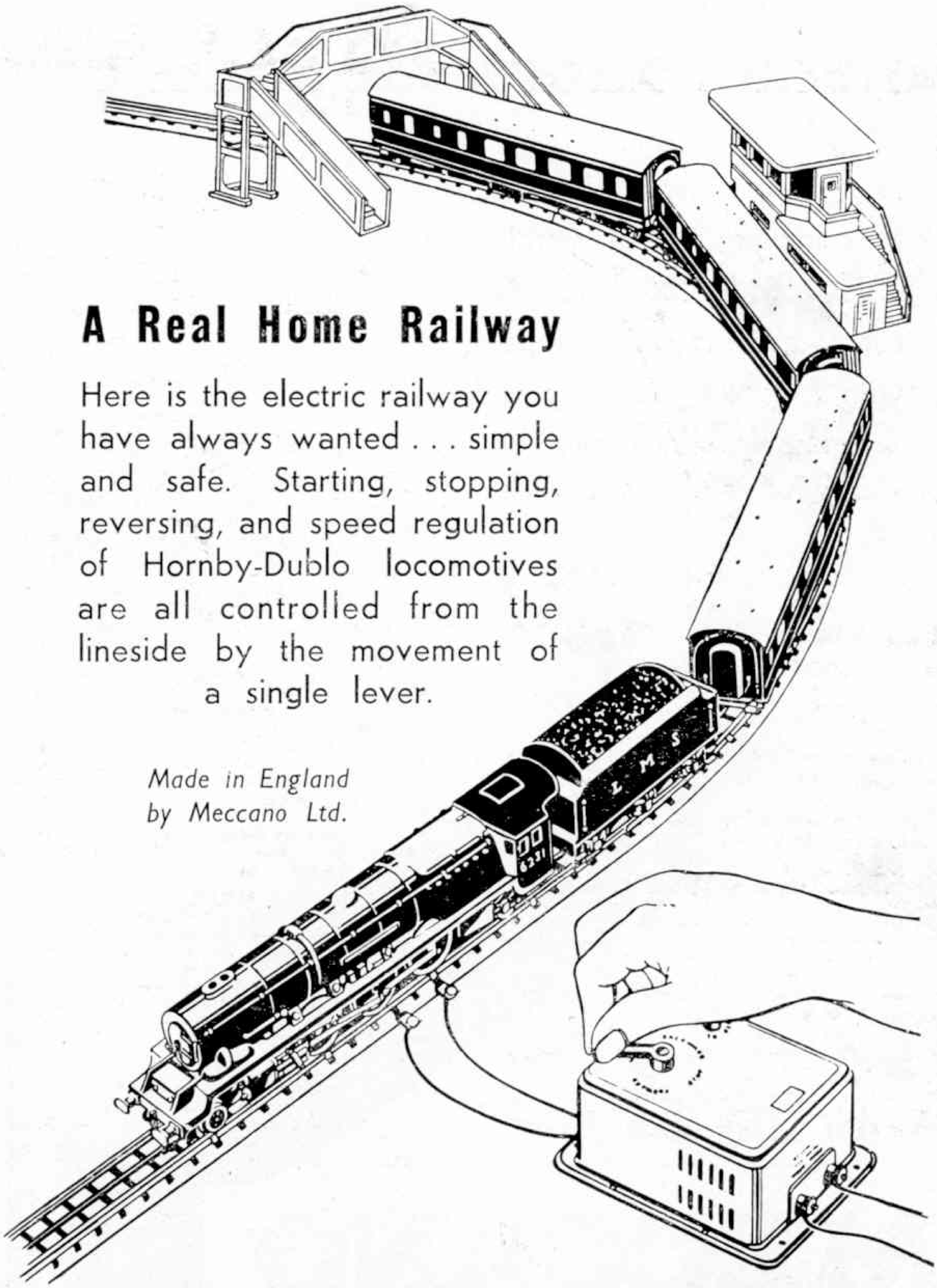

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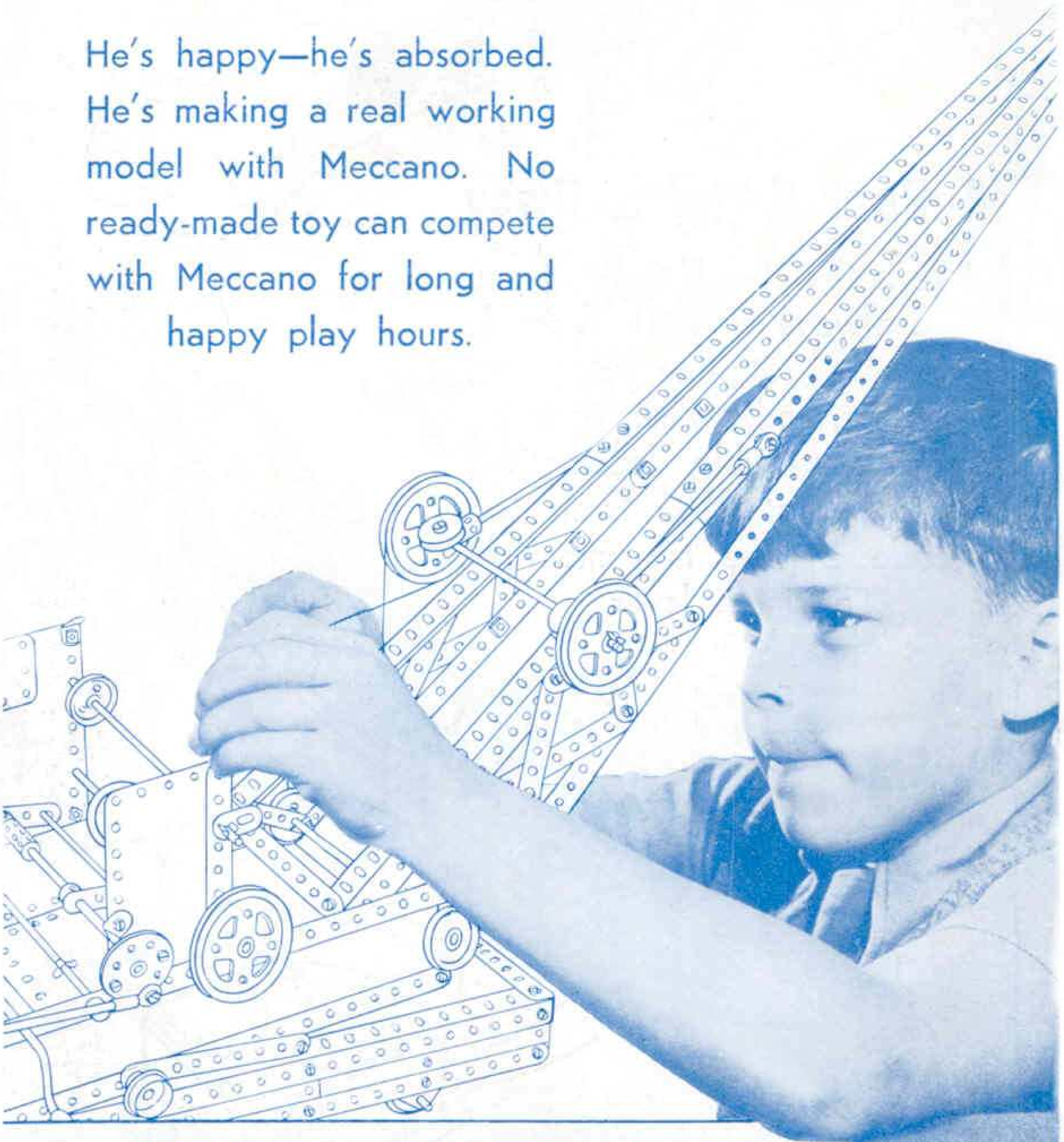

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